CANADIAN JOURNAL OF DENTAL HYGIENE · JOURNAL CANADIEN DE L'HYGIÈNE DENTAIRE

CJDH JCHD

CDHA ACHD

JULY–AUGUST 2009, VOL. 43, NO. 4

Utilizing the oral innate immune system

Cochrane Reviews

Smile Sensations, Smiths Falls, Ontario, 166

THE OFFICIAL JOURNAL OF THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

Position for commercial advertisement

On achievements

That some achieve great success, is proof to all that others can achieve it as well.
Abraham Lincoln, 1809–1865

Wanda Fedora,
RDH

I look back on the past months and marvel at the accomplishments of our association and of so many of our members. From online courses to research initiatives, to government input and corporate partnerships, the achievements are many. Members are being recognized in their provinces for their dedication and commitment. On the national stage, we are presenting an Outstanding Service award to Manitoba dental hygienist, Mickey Wener, for her significant contributions to her profession and association. Congratulations to all award recipients, at the provincial or national levels! There are many dental hygienists being "all they can be" and collectively, as a fraternity as well as the public, we reap the rewards.

The move to self governance has now spread to Nova Scotia and New Brunswick as they reach their goal as self governing dental hygienists. The road to self governance has been long and challenging. Thanks to our champions along the way and the support of our fellow professionals, we are arriving at the destination a stronger and even more dedicated association. Our colleagues who still travel the road will benefit from the support of others as they cheer them on to the finish line.

With the changes, the doors to the future have opened wide, and many of our colleagues are heading out on new paths; independent practitioners are forming their own associations to further support one another as they cut the path they travel. The underserved communities in our society are welcoming oral health care that is being brought to them by pioneers who are hitching up their mobile clinics and striking out for new frontiers. It is an exciting time and we are fortunate to be part of the success.

Enjoy your summer and soak up all that energy that you get from vacationing with family and friends. Allow yourself the opportunity to relax in the places you like best, and you will face the fall invigorated and renewed.

We all need to invest in ourselves so that we can reach our goal of being "all that we can be".

Wanda Fedora RDH.

CDHA welcomes your feedback: president@cdha.ca

La réussite

Que certains réussissent fort bien, voilà qui prouve à tous que les autres peuvent aussi réussir.
Abraham Lincoln, 1809–1965

Jetant un regard sur les derniers mois, je me suis émerveillée de voir ce que notre association et un si grand nombre de nos membres avaient accompli. Des cours en ligne aux initiatives de recherche, de l'apport du gouvernement et aux partenariats d'affaires, nos réalisations furent nombreuses. Dans les provinces, le dévouement et l'engagement de nos membres sont reconnus. À l'échelle nationale, nous décernons un prix pour services remarquables à l'hygiéniste dentaire Mickey Wener, pour son importante contribution à sa profession et à son association. Félicitations à toutes celles qui ont reçu un prix, au niveau provincial ou national ! Beaucoup d'hygiénistes dentaires « réalisent leur potentiel » et, collectivement, en tant que fraternité, tout comme la population, nous en récoltons les fruits.

La démarche vers la pratique autonome s'étend maintenant à la Nouvelle-Écosse et au Nouveau-Brunswick où les hygiénistes dentaires atteignent le but qu'elles s'étaient fixé. Le cheminement vers l'autonomie a été long et éprouvant. Grâce à l'intervention de nos championnes et au soutien de nos collègues professionnelles, nous arrivons à destination avec une association plus forte et encore plus dévouée. Nos collègues qui sont toujours en cheminement bénéficieront de l'appui des autres qui les acclameront à la ligne d'arrivée.

Avec ces changements, les portes de l'avenir s'ouvrent toutes grandes et beaucoup de nos collègues s'engagent dans de nouvelles voies; des praticiennes autonomes forment leurs propres associations pour se soutenir davantage mutuellement en se frayant un chemin. Les collectivités qui en sont dépourvues accueillent les services de soins buccaux que leur apportent ces pionnières qui tirent leurs cliniques mobiles vers de nouvelles frontières. Nous vivons une période stimulante et avons la chance de participer à cette réussite.

Passez un bel été et imbibez-vous de l'énergie que procure des vacances avec la famille et les amis. Saisissez l'occasion de vous détendre là où vous vous sentez le mieux pour éventuellement aborder l'automne ragaillardies et avec une vigueur renouvelée.

Nous avons toutes besoin de nous investir pour atteindre notre but ultime qui est de « réaliser notre potentiel ».

L'ACHD accueille vos commentaires : president@cdha.ca

I AM CONNECTED…

…ARE YOU?

Position for commercial advertisement

MASTHEAD

CDHA BOARD OF DIRECTORS

Wanda Fedora	*President; Nova Scotia*
Jacki Blatz	*President Elect; Alberta*
Carol-Ann Yakiwchuk	*Past President; Manitoba*
Anna Maria Cuzzolini	*Quebec*
Arlynn Brodie	*British Columbia*
Bonnie Blank	*Educator Representative*
France Bourque	*New Brunswick*
Julie Linzel	*Prince Edward Island*
Maureen Bowerman	*Saskatchewan*
Palmer Nelson	*Newfoundland and Labrador*

EDITORIAL BOARD

Sandra Cobban	Barbara Long
Laura Dempster	Peggy Maillet
Indu Dhir	Susanne Sunell
Leeann Donnelly	

Scientific Editor: Susanne Sunell, EdD, RDH

Managing Editor: Chitra Arcot, MA (Pub.), MA (Eng.)

Acquisitions Editor: Linda Roth, RDH, DipDH

Graphic design and production: Mike Donnelly

Published six times per year (January/February, March/April, May/June, July/August, September/October and November/December) Canada Post Publications Mail #40063062.

CANADIAN POSTMASTER
Notice of change of address and undeliverables to:
Canadian Dental Hygienists Association
96 Centrepointe Drive, Ottawa, ON K2G 6B1

SUBSCRIPTIONS
Annual subscriptions are $90 plus GST for libraries and educational institutions in Canada; $135 plus GST otherwise in Canada; C$140 US only; C$145 elsewhere. One dollar per issue is allocated from membership fees for journal production.

CDHA 2009
6176 CN ISSN 1712-171X *(Print)*
ISSN 1712-1728 *(Online)*
GST Registration No. R106845233

CDHA HUMAN RESOURCES
Executive Director: Dr. Susan A. Ziebarth
Director of Strategic Partnerships: Johanna Roach
Director of Education: Laura Myers
Health Policy Communications Specialist: Judy Lux
Information Coordinator: Brenda Leggett
Executive Assistant: Frances Patterson
Financial Coordinator: Lythecia M. Desloges
Strategic Partnerships Coordinator: Shawna Savoie
Membership Services: Sabrina Jodoin
Accounting Specialist: Laura Sandvold
Independent Practice Advisor: Ann E. Wright
Director TechnoSocial Integration: Ronald Shafer
Management Information Systems Technician: Dave Sullivan
Webmaster: Michael Roy
Receptionist: Chantal Aubin
Media Interactive Developer: Michel Lacroix

CDHA CORPORATE SPONSORS

P&G Crest Oral-B	Johnson & Johnson	Dentsply
Sunstar G.U.M.	Listerine	BMO Mosaik MasterCard

ADVERTISING: Keith Communications Inc. Peter Greenhough; 1-800-661-5004 or pgreenhough@keithhealthcare.com

All CDHA members are invited to call the CDHA Member/Library Line toll-free, with questions/inquiries from Monday to Friday, 8:30 a.m. – 5:00 p.m. ET. **Toll free: 1-800-267-5235, Fax: 613-224-7283, E-mail: info@cdha.ca, Web site: http://www.cdha.ca**

The *Canadian Journal of Dental Hygiene (CJDH)* is the official publication of the Canadian Dental Hygienists Association. The CDHA invites submissions of original research, discussion papers and statements of opinion of interest to the dental hygiene profession. All manuscripts are refereed anonymously.

Editorial contributions to the *CJDH* do not necessarily represent the views of the CDHA, its staff or its board of directors, nor can the CDHA guarantee the authenticity of the reported research. As well, advertisement in or with the journal does not imply endorsement or guarantee by the CDHA of the product, service, manufacturer or provider.

© 2009. All materials subject to this copyright may be photocopied or copied from the web site for the non-commercial purposes of scientific or educational advancement.

The CDHA acknowledges the financial support of the Government of Canada through the Canada Magazine Fund toward editorial costs.

Canada

FSC © Mixed Sources
Product group from well-managed forests, controlled sources and recycled wood or fiber
www.fsc.org Cert no. SW-COC-001506
© 1996 Forest Stewardship Council

CONTENTS

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

EVIDENCE FOR PRACTICE

DEPARTMENTS

INFORMATION

Position for commercial advertisement

Position for commercial advertisement

What's in a name?

Leadership is the special quality which enables people to stand up and pull the rest of us over the horizon. James L. Fisher

A good leader can't get too far ahead of his followers. Franklin D. Roosevelt

Dr. Susan Ziebarth

This issue, I gather content from disparate sources and weave into the material threads from our lives and CDHA.

A story...

A man comes across a woman crawling on the ground. He asks her if she is okay because she appears to be in distress. She thanks him for his kind enquiry, and reports that she is looking for her lost keys. He joins her in the search to no avail, so he enquires where she thinks she dropped them. She tells him that she does know where she dropped them and that the location is about half a kilometre down the street. Bewildered, he asks why they are looking for the keys where they were kneeling. She replies confidently that is because this location is familiar to her and that the light here is better.

How often in life we look for our metaphoric lost keys in familiar, well lit locations! In May, Wanda Fedora wrote to our members on behalf of the Board of Directors and asked whether they would like to see a name change for CDHA. The Board had scanned the environment, had considered many factors in making the proposal, and were extremely pleased with the high percentage of replies and thoughtful notes sent in by many members. Although the name change was not endorsed, the close vote and the decisions made in choosing to vote either way, focused many dental hygienists to examine their thoughts about the profession and their role in it.

The support for the profession and for your national association was incredible. Some members wrote asking for more details. Others wanted to better understand the costs and what was involved with changing a name. Still others were very excited about a new branding. Interestingly, from anecdotal and sociological perspectives, differences in thinking were highlighted by geography and language that parallel many of Canadians' differences in political leanings and thoughts as reported in the media on a broad range of issues.

The reason I started with the story was because of the range of messages and tones I received on the proposed name change. I quote from a few.

"... speaks more about our identity, has more power, and is shorter. People can easily remember it. Because CDHA and CDA can be interchanged sometimes, right? Go for it."

"The name *Dental Hygiene Canada* sounds like a winner to me."

"Can you please stop wasting time and money on nonsense? That is not what you are paid to do. What a disgrace!"

The Board is accountable to the owners of the organ-

...continued on page 166

CDHA welcomes your feedback: info@cdha.ca

Que trouve-t-on dans un nom?

Le leadership est une qualité particulière qui permet aux gens de se tenir debout et d'entraîner les autres au-delà de l'horizon. James L. Fisher

Un bon leader ne saurait trop devancer ceux qui le suivent. Franklin D. Roosevelt

Dans le présent numéro, je m'inspire de sources disparates et me faufile dans l'enchevêtrement de nos vies et de l'ACHD.

Une histoire…

Un homme croise une femme qui se traîne par terre. Il lui demande si elle va bien, car elle lui paraît en détresse. Elle le remercie de sa gentillesse et précise qu'elle cherche ses clés qu'elle a perdues. Il se met à chercher avec elle, mais en vain; il lui demande alors où elle croyait les avoir échappées. Elle répond qu'elle ne le sait pas et que ce serait à environ un demi kilomètre plus loin. Perplexe, il lui demande pourquoi ils cherchaient les clés là où ils fouillaient à genoux. Elle répond confidentiellement que cet endroit lui est familier et qu'il est mieux éclairé.

Combien de fois dans la vie cherchons-nous dans des endroits familiers et bien éclairés les clés métaphoriques que nous avons perdues! Au mois de mai, dans un message adressé au nom du conseil d'administration, Wanda Fedora demandait aux membres si elles souhaitaient changer le nom de l'ACHD. Le conseil avait scruté l'environnement et considéré plusieurs facteurs pour faire sa proposition; puis il fut extrêmement content du taux élevé des réponses et des notes attentionnées de plusieurs membres. Si le changement n'a pas été approuvé, le vote serré et les décisions soutenant les deux points de vue ont incité beaucoup d'hygiénistes dentaires à réfléchir sur la profession et le rôle qu'elles y jouent.

L'appui porté à la profession et à votre association nationale est incroyable. Certains membres ont demandé par écrit plus de détails. D'autres voulaient mieux connaître les coûts et les implications d'un changement de nom. D'autres encore étaient tout excitées face à une nouvelle image de marque. Dans une perspective anecdotique et sociologique, il est intéressant de noter que les différences d'opinion allaient joliment de pair sur les plans géographique et linguistique avec celles des opinions politiques et idéologiques dont les médias font état sur une foule de questions.

La petite histoire du début s'inspire de l'éventail des opinions et des tons des messages reçus sur la proposition de changement de nom. En voici quelques extraits.

« … reflète davantage notre identité, est plus puissant et est plus court. Il se retient plus facilement. Parce que l'ACHD et l'ACD sont parfois substituables. Pas vrai ? Allez-y. »

« Le nom Hygiène dentaire Canada *me semble gagnant, à mon avis. »*

…suite page 166

L'ACHD accueille vos commentaires : info@cdha.ca

Utilizing the oral innate immune system to diagnose and monitor periodontal diseases

Michael Glogauer[§ ± ¤], DDS, PhD; Guy M. Aboodi[§ ±], DMD; Andrea J Heckler[§], DMD; Howard Tenenbaum[§], DDS, PhD.

ABSTRACT

The immune response during periodontal disease is a complex cascade of events that involves many components of the immune system. Although periodontal tissue destruction is initiated by bacteria, it is primarily caused by the host immune response. The most abundant white blood cell in the periodontal lesion is the neutrophil. High neutrophil levels have been shown to correlate with cases of severe active periodontal disease. This review discusses current understanding of the role of the oral innate immune system in periodontal health and disease, and how this information is being used to develop novel tools for detecting and diagnosing this common oral infection.

RÉSUMÉ

La réaction immunitaire à une maladie parodontale est une cascade complexe d'activités qui implique plusieurs composantes du système immunitaire. Bien qu'elle soit déclenchée par des bactéries, la destruction du tissu parodontal est surtout causée par l'hôte de la réaction immunitaire. La forte abondance de globules sanguins blancs dans la lésion parodontale est neutrophile et il y a une corrélation entre le niveau élevé de neutrophilie et les cas où la maladie parodontale est grave et active. Cette revue traite de la perception actuelle du rôle du système immunitaire buccal inné en matière de santé et de maladie parodontales ainsi que de l'utilisation qu'on fait de cette information pour développer de nouveaux outils de détection et de diagnostic des infections buccales courantes.

Key words: periodontitis, inflammation, innate immunity, neutrophils, oral rinse assay

INTRODUCTION

Periodontitis is a destructive inflammatory disease that adversely affects the tissues supporting teeth within the periodontium.[1] The inflammatory processes associated with periodontitis are an essential part of the host's immune defence, and are induced by microbial biofilm.[2,3] Ironically, although inflammation has a protective role against bacterial infection, it is also considered to play a role in periodontal tissue destruction and attachment loss.[4,5] Unless treated, periodontitis will cause increased tooth mobility followed by eventual tooth loss.

In most cases, the progression of periodontitis is painless, which is somewhat anti-intuitive since inflammatory mediators are known to cause pain.[2] Consequently, this highlights an important challenge with respect to patient management: in most cases diagnosis is made by the clinician at the dental office, with no initial complaint by the patient. Occasionally the patient, who might be somewhat skeptical of the diagnosis, will then ask to see how that diagnosis was made before agreeing to the proposed periodontal therapy.[1] A visual clinical test identifying active periodontal infections would be an important addition to the tools utilized by dental health professionals to diagnose periodontal diseases. This will allow the clinician not only the ability to use the test as an educational tool, but to also build a treatment plan that will address the current disease state or even a future periodontal breakdown.

§ Faculty of Dentistry, University of Toronto. ± CIHR Group in Matrix Dynamics, University of Toronto. ¤ OMGPerio, Hamilton, Ontario
Submitted 27 Mar. 2009; Last revised 31 May 2009; Accepted 5 Jun. 2009.
This is a peer-reviewed article.
Correspondence to: Michael Glogauer; michael.glogauer@utoronto.ca
Canadian Institutes of Health Research Group in Matrix Dynamics
Faculty of Dentistry Room 241 Fitzgerald Building, University of Toronto,
150 College Street, Toronto, ON M5S 3E2

Yet, in order for oral health professionals to improve diagnostic skills along with the capability of demonstrating evidence that substantiates diagnoses, oral health professionals need to understand the mechanisms underlying periodontal disease more clearly. Specifically the contributions of the immune system to the progression of the disease are of particular importance and will be the focus of this paper. The authors concentrate on the oral immune system, with an overview of its role in periodontal pathogenesis, concluding with a discussion on how an improved understanding of the immune mechanisms underlying periodontal disease will help oral health professionals improve treatment and develop diagnostic tools that allow early detection of periodontal diseases.

THE IMMUNE SYSTEM

The human body has several defence mechanisms to fight infection.[6,7] Physical barriers (for example, skin and mucous membranes) are the first line of defence, and their aim is to prevent the entry of pathogens. Physiological and environmental factors such as pH, temperature, and normal bacterial flora of the body also have a role in limiting microbial growth. If pathogens penetrate the outer barriers of the body and remain viable, the immune system must then recognize and eliminate them.

The immune system can be divided into two separate components as shown in Figure 1, which work together to recognize and eliminate pathogens.

- *Innate Immune System*, which is active from birth, provides a natural, nonspecific immunity. As the name suggests, there is no "learning" process—innate immunity is independent of any prior contact. This arm of the immune system is the focus of this review.
- *Acquired Immune System* adapts after first contact with a pathogen. "Memory cells" are created, so that a second

contact initiates a faster and more specific response. Acquired immunity is further divided into two components—cellular (T-cell) and humoral (antibody producing B-cell) immune responses.

The primary differences between the acquired and innate immune systems are the speed of reaction, specificity of reaction, and the memory capacity which exists in the acquired immune pathway. However both systems work together in the immune response, and as more is learned, the boundaries between the two are becoming less distinct.

Innate immune system

This activates as soon as a pathogen penetrates the external barriers that protect the body. It is essential to human life and provides the host with immediate and nonspecific immune response to bacterial infections.[8] The primary cell involved in this protective response is the neutrophil.[9] Polymorphonuclear neutrophil is the dominant white blood cell in the bloodstream (60%–70% of all circulating white blood cells). Although they normally number about 3-5x10^6 cells/ml of blood, neutrophil numbers can rapidly increase by as much as 5–10 fold during periods of acute infection.[10–12] This cell has a multilobular nucleus, which gives it its specific name. Neutrophils develop in the bone marrow from myeloid precursors, migrate into the circulation, and, if required, make their way into infected or damaged tissues. After a neutrophil is released from the bone marrow compartment, it has a blood half life of about 10 hours and may survive up to an additional 48 hours within infected or damaged tissues.[13,14] Since these cells have a very short half life in the blood, the bone marrow compartment must provide a steady supply of mature neutrophils that are able to accelerate normal cell replication rates rapidly in response to infection.

Neutrophils are present in the blood stream in an inactive state but become quickly activated when they detect specific chemokines or other signalling molecules released by bacteria or the infected tissue,[15] and are the first cells to arrive at the site of infection due to their high levels in the blood stream. Their ability to move quickly to the site of infection is also enhanced by a process known as chemotaxis; essentially the ability of these cells to detect the chemokines and track towards increasing concentrations of these molecules, the highest concentrations being near the site of infection. As well, neutrophils fight infection with an array of potent enzymes contained in granules in their cytoplasm including, but not limited to, myeloperoxidase and collagenases that are used to kill the bacteria once they have been ingested through the process known as phagocytosis.[6,16] Each phagocytic event results in the formation of a phagosome into which reactive oxygen species and hydrolytic enzymes are delivered. This process is termed the "respiratory burst",[17,18] and involves the activation of the enzyme nicotinamide adenine dinucleotide phosphate-oxidase (NADPH oxidase), an enzyme that produces large quantities of superoxide, a reactive oxygen species. Superoxide converts to hydrogen peroxide, and then hypochlorous acid (HOCl), which is bactericidal[19] to the phagocytosed bacteria. Accordingly, any disruption in the chemotaxis, or phagocytic cascade, or both, in neutrophils can render them nonfunctional thus permitting the development of life threatening infections in the host.[20]

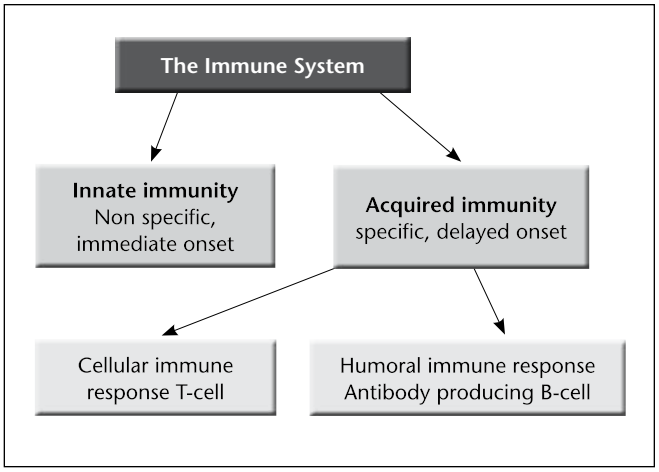

Figure 1: The immune system

The inflammatory response and its relevance to the immune response

Inflammation is characterized by four classic clinical symptoms—heat, redness, swelling, and pain. The inflammatory response is the body's defence mechanism, which serves to destroy the pathogenic agent, and allows for the passage of immune cells to the tissue. It also plays a role in the initiation of healing within the affected tissue.[2]

Acute inflammatory response is triggered by penetration of a pathogen, and it signals the innate immune system components to arrive at the site of infection. While neutrophil proliferation and activity are both up-regulated, there are also important and supportive vascular changes that occur in inflamed tissues which are triggered by such inflammatory mediators as histamine and serotonin. The latter increases vascular permeability, owing to its ability to cause vasodilation. As a result of vasodilation, gaps form between endothelial cells that line blood vessels at the site of pathogen penetration. This allows for an increase in blood flow to the tissue, which brings with it increased migration of neutrophils and other innate immune cells out of the dilated blood vessels.

During chronic inflammation there is also an increase in the number of cells that play a role in acquired immunity cells such as macrophages and lymphocytes. Paradoxically, some of the mediators which are released during inflammation, and even the activated immune cells themselves, can also lead to destruction of the very tissue that the protective agents (molecules or cells or both) are supposed to protect. Hence, while inflammation is a protective process, it can also lead to tissue injury, particularly when it persists after healing has already begun. Detailed discussions of the inflammatory response can be found in reviews and textbooks.[2,6,7,21]

Oral immune system

The oral cavity is a repository for both commensal and pathogenic bacterial, and other prokaryotic organisms. The bacterial organisms coat virtually all intraoral surfaces

in the form of a biofilm.[22] Given this, several mechanisms have evolved to protect the host against invasive or disease causing microorganisms so as to prevent systemic disease. Indeed, the oral immune system is a complex system which is even regarded by some as a separate local system.[23] The oral immune system must be controlled tightly in order to protect the host effectively but without causing undue damage to host tissues that might be under "attack" from pathogenic or even supposedly nonpathogenic organisms. For example, whilst a very robust and uncontrolled oral immune system can lead to severe damage to oral tissues (as observed in periodontitis), the absence of a functional immune system for example AIDS, will lead to similar, and in some cases even more severe, levels of local tissue destruction as well as actual infection by normally nonpathogenic organisms, for example candidal organisms.[24,25]

The first line of defence within the oral cavity is composed of three external barriers: saliva, oral and junctional epithelium, and gingival crevicular fluid.

Saliva: Human saliva contains several antimicrobial factors that contribute to protection of the oral cavity. These can be divided into two main groups: innate factors and acquired factors. Innate factors are fully developed in newborns, and include various enzymes and proteins, such as lysozyme and lactoferrin, which are bactericidal. Acquired factors are mainly immunoglobulins, the products of B-cells. Their levels in saliva increase in response to gingivitis and periodontitis, as well as in other diseases of the oral cavity.[26,27]

Oral epithelium: Similar to skin, it functions as a mechanical barrier. Junctional epithelium (JE) however, is an interesting component of the gingiva, with an important role in oral immunity;[28] its location results in constant interactions with bacteria at the base of the gingival sulcus. JE comprises nonkeratinized epithelium located at the floor of the gingival sulcus and extends to the point of attachment between the gingival soft tissues and the tooth. It is noteworthy that the only area in the body where there is an actual perforation of a structure (the tooth) through the integumentary system (skin, mucosa) is in the mouth.[29] Therefore the attachment between the gingival tissues and teeth are unique, with respect to structure and adhesion. It is in this region, the sulcus, where a seal between the epithelium and the tooth, albeit permeable, forms. Despite this permeability the gingival attachment functions as a barrier and plays an important role in resisting the progression of periodontal disease and the attendant destruction of the periodontium.

Other than acting as a physical barrier, JE also presents innate immune factors. Antimicrobial peptides, called defensins, have been localized to the JE.[30] It has also been shown that JE has the ability to enhance inflammation by releasing inflammatory mediators when exposed to bacterial components.[31] Another interesting finding suggests that cells of JE possess phagocytotic capabilities.[28]

Gingival crevicular fluid (GCF): It is a fluid transudate that flows constantly from JE. Its main function is to minimize the accumulation of pathogenic bacteria within the gingival sulcus thereby reducing the likelihood for development of disease, for example, gingivitis and periodontitis. GCF contains components that are derived from serum and from gingival tissue. Similar to saliva, it contains various proteins as well as immune components, both innate and acquired.[32] The neutrophil is the primary cell type found in GCF, making up 95 per cent of the cellular component. The dominant presence of neutrophil within GCF may point to its importance in preventing the progression of periodontal disease. The level of neutrophils and inflammatory mediators is increased in diseased sites compared to healthy sites. The relationship between the level of neutrophils in the GCF and the diagnosis of active periodontal disease was recognized as early as 1984.[5]

Oral immune system is highly organized and suited for the maintenance of a healthy state at the dentogingival interface. However, one can also consider that the gingival sulcus is a "battlefield" between the host and potentially pathogenic microorganisms: microbial biofilm accumulates there protected from salivary flow and mechanical cleaning by the cheek and tongue muscles. JE and GCF maintain a delicate equilibrium between microbial components and inflammatory reaction. During a state of active periodontal disease, the bacterial content in the sulcus reaches a threshold that tips the balance towards up-regulation of the immune response.[33] Hence, this will have both infection fighting and tissue destruction consequences.

Pathogenesis of periodontal disease

The understanding of periodontal disease and its etiology is that the accumulation of specific bacteria will result in the initiation of inflammation, which then progresses into periodontitis. However, it is not the bacteria themselves which cause tissue destruction, but rather the host's inflammatory response to these bacteria.[34] Therefore, there are significant differences between patients when comparing the pace of disease progression, levels of tissue destruction, and treatment outcomes. This suggests that the host response to bacterial infection plays a key role in the pathogenesis of periodontal disease. Such environmental factors as smoking, or stress, or systemic diseases can also influence the severity and intensity of periodontal disease, as well as the healing process.[1,33,35–37]

Although the exact pathophysiology of periodontitis is not fully understood yet, one can assume that the immune response to periodontal pathogens is extensive and involves all or most of the immune system components, both innate and acquired. However, various studies emphasize specific immune components that are considered to have different effects on the host reaction to periodontitis.

Acquired immunity

Humoral immune response

The humoral immune system—controlled primarily by B-cells which produce immunoglobulin G (IgG)—is considered by some to be the determining factor for the progression of periodontal disease.[32] It has been demonstrated that the level of serum IgG rises as a reaction to the presence of specific periodontal bacteria, such as *Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis* and *Prevotella intermedia*.[33] It was also shown that the level of serum IgG correlates directly to the severity of the disease, as measured by disease parameters including pocket depth, and the extent and severity of bleeding on probing.[38]

Cellular immune response

Some believe that the cellular immune response, mediated by T-cells, also plays a role in the progression of periodontal disease and tissue destruction. T-cells and their products—various cytokines which are used to control immune mechanisms—have been shown to cause destruction of the attachment apparatus during the different stages of progression of the inflammatory process in several animal studies.[36,37] Interestingly, some of the cytokines produced by T-cells may have a role in controlling neutrophil activity.[39]

Innate immune response

In contrast to the above studies which stress the influence of the acquired immune system on periodontal diseases, others, including this paper, place more emphasis on the innate immune reaction, directed specifically by neutrophils.[5,40] The presence of bacteria in the oral cavity is kept under control, in part, by the constant influx of neutrophils which migrate into the mouth from the periodontal tissues that surround and support the teeth.[8,41]

The role of neutrophils in the inflammatory process of the oral cavity is well known.[3,42] Their protective role is based on the pathophysiological processes involved in aggressive periodontitis, for example. A genetic disorder of a neutrophil adhesion defect (Leukocyte adhesion deficiency or LAD) leads to localized, rapidly progressing tissue destruction due to an inability for these cells to exit the blood stream into the tissues.[43] On the other hand, in addition to their protective role, neutrophils release toxic products that contribute to the destruction of periodontal tissues using both direct mechanisms by release of such enzymes as collagenase, and indirect mechanisms by release of cytokines, that can amplify the inflammation process.[5,35,42,44]

Neutrophil is the most dominant immune cell in the bloodstream (60%–70%). Its presence in the sulcus—and in the case of loss of attachment, in the periodontal pocket—is even higher due to its high concentration in GCF. As it is the first immune cell to arrive at the site of infection, it plays a critical role in regulating the reactions of many immune components. It directs the immune response by releasing various cytokines which affect the neutrophils themselves, B-cells, T-cells and the inflammatory process itself.[42] In addition to being the dominant immune cell found in the acute inflammatory process, neutrophils are also present in chronic inflammatory situations such as osteomyelitis and rheumatoid arthritis.[3] The role of neutrophils in rheumatoid arthritis is currently under investigation, and it has been established that although it is considered to be a chronic disease, neutrophils may be key players in the disease progression and tissue destruction.[45] Notably then, the pathogphysiological processes involved in periodontal disease are similar to those described with rheumatoid arthritis.[35]

Neutrophils and the role in the progression of periodontitis

It has been demonstrated that there is a direct relation between the level of neutrophils in the GCF and the diagnosis of active periodontal disease.[5] Furthermore, patients with refractory periodontitis present a significantly hyperactive neutrophil phenotype—the neutrophils increase their phagocytotic activity and generate higher levels of oxygen radicals, both of which are killing mechanisms used by neutrophils against bacteria[4,40] but, particularly in the case of oxygen radicals, may contribute directly to periodontal breakdown in those patients. Those radicals are released into the extracellular matrix, and through oxidation, damage the adjacent tissues.[46]

Current research on the role of neutrophil in periodontal inflammation demonstrates that it has three major functions—protective, regulatory and destructive—either directly or by producing and releasing toxic products. In patients who present with hyperactive neutrophils, the destructive component may be uncontrolled and may be the cause for refractory or recurrent periodontal tissue destruction.

Identifying those particular patients could allow the development of more biologically rational treatment, one that targets specific steps or components of uncontrolled inflammatory activity, than is available currently. Patients who are at risk of rapid progression of periodontal disease for example, recurrent periodontitis patients or patients with familiar history of recurrent periodontitis, or diabetic patients, or radiation therapy patients require close monitoring of their oral health. Frequent recall visits and sanative therapy prevent rapid destruction of periodontal tissues.[47,48] However there is no available diagnostic test which will allow for the prediction of a "periodontal crisis" that is active tissue destruction.

Several models have been developed to assess patients' susceptibility to periodontal diseases.[49,50] These models are based on clinical findings, systemic conditions, oral hygiene, and behavioural factors. Such behavioural factors as smoking and increased age are considered to be major contributing factors to the relapse of periodontal breakdown.[51–54] All studies emphasize patients' behavioural factors as predictive tools and accordingly, it has been suggested that high risk patients have short intervals between follow up appointments.[47]

Although these models can be helpful for the identification of patients at risk for the development of periodontitis, they are based on generalized and somewhat nonspecific parameters. The authors hypothesize that a diagnostic test which measures disease activity would be a very useful and more precise tool for identification of patients who are at risk for the development of active tissue destruction before it occurs. The value for such a test is obvious as currently there is no method of detecting disease activity; tests such as probing only report previous history of disease activity.[1,35]

While understanding the important role of neutrophils in the inflammatory process and tissue destruction during periodontal disease, it is essential to recognize those patients who present with high levels of these cells, to exploit the well demonstrated correlation between oral neutrophil levels and the presence and severity of *active* periodontal disease—simply put, a higher number of neutrophils indicates an increase in severity.[55]

Development of a novel assay for oral neutrophil levels

Recent research suggests that the innate immune system

can be monitored noninvasively by using samples from the mouth by the use of an oral rinse that measures oral neutrophil levels.[56–58] The underlying principle of this test is that for normal innate immunity, neutrophils must be able to enter the bacteria rich oral cavity in order to maintain health. Any defects in this normal recruitment can be monitored using a standardized rinse test to quantify oral neutrophil levels much like a standard complete blood count for these cells. Although not clear yet, it is possible that peripheral neutrophils measured using blood tests could be phenotypically different than the so called oral neutrophils. Nevertheless, oral neutrophil levels can be measured readily, and seem to be predictive of disease or stability. During infections or following surgery, neutrophil levels spike indicating an active immune and healing response. In addition to using an oral rinse to monitor periodontal disease,[55] the authors also used an oral rinse assay to monitor susceptibility to infection and acute neutropenia (low blood neutrophil counts) that occur during hematopoietic stem cell transplantation. Using this assay, the authors confirmed that oral neutrophil levels can be used to monitor and report on the state of the innate immune system in pediatric,[58] and adult patients with successful bone marrow transplants.[57,59]

A similar and simple oral rinse assay for the quantification of oral neutrophils has been suggested as a diagnostic tool that will permit the clinician to evaluate the level of neutrophils in patients' saliva.[55,60] This rinse assay may be the first step towards a chairside diagnostic tool which would allow both the clinician and the patient to diagnose not only an active periodontal disease state but also to predict periodontal breakdown *before it occurs*. Current diagnostic tools generally only demonstrate disease activity that has already led to tissue destruction, and are not predictive. In order to achieve this goal, patients would have to take this test regularly. An increase in neutrophil levels, compared to the basic levels that were tested before, will have a predictive value. This hypothesis is now under investigation. Hence, instead of applying the same 'cookie-cutter' treatment approach used to manage periodontitis for all patients, the newer diagnostic approach could allow clinicians to develop a disease oriented treatment plan, and significantly shift the focus of care from mechanical removal of plaque and calculus to more comprehensive disease targeting. The development of drugs that target specific elements in the inflammation process will allow specific treatment to be biologically fitted to each patient. The development of drugs capable of slowing down neutrophil dependent inflammation, without interfering with the innate immune response, is already in progress.[45] Perhaps inhibitory drugs that affect specific mediators which contribute to periodontal destruction will be developed too.[34,35] Identifying those patients who would benefit from such treatment may be key to improving success in treating and, even more importantly, preventing periodontal disease.

SUMMARY

- Innate immunity is a pathway of the human immune system. Together with acquired immunity, it is the "defence force" of the human body from such pathogens as bacteria, viruses, fungi, and more. For several reasons such as temperature, structure, and food, the oral cavity provides an ideal environment within which pathogens can grow. Coupled to the fact that the periodontium provides for a unique entry point for pathogens to the body, the oral immune system recruits both branches of the immune system as well as other defence mechanisms.
- The immune response to periodontal disease is a complex cascade of events that involves many components of the immune system. Periodontal tissue destruction, although initiated by bacteria, is primarily caused by the host immune response. Hence one might consider that putative pathogenic bacteria are necessary for the immune system activation but not sufficient for the initiation, or progression, or both of periodontal diseases.
- It has yet to be determined which is the key element in directing the progress of periodontal disease. However, the significant role of neutrophils in several mechanisms which contribute to periodontal destruction cannot be ignored—enhancing the inflammatory process by release of inflammatory mediators; indirectly regulating other immune components by release of different cytokines; as well as contributing directly to tissue destruction by release of toxic enzymes.
- High neutrophil levels have been shown to correlate with cases of severe active periodontal disease, and future research will investigate the relationship between high neutrophil levels and subsequent periodontal breakdown.
- These developments in understanding the nature of the immune response to periodontal disease, with an emphasis on the role of neutrophils in that process, will help develop disease oriented treatment methods. This will allow oral health professionals to treat the specific disease mechanisms in each patient, resulting in improved outcomes for periodontal treatment in patients who do not respond to standard plaque control treatment. It also cannot be over emphasized that studies of the innate immune system of the oral cavity will also lead to clearer understanding of an even wider array of inflammatory diseases, for example arthritis or cardiovascular diseases, that affect general health.

REFERENCES

1. Loesche WJ, Grossman NS. Periodontal disease as a specific, albeit chronic, infection: diagnosis and treatment. *Clin Microbiol Rev*. 2001 Oct;14(4):727–52.
2. Kumar V, Abbas AK, Fausto N, Robbins SL, Cotran RS. *Robbins and Cotran Pathologic Basis of Disease*. 7th ed. Philadelphia, USA: Elsevier Saunders; 2005.
3. Lavelle CL. The immune response to oral infections. *Dent Update*. 1992 Jan;19(1):14–20.
4. Kantarci A, Oyaizu K, Van Dyke TE. Neutrophil-mediated tissue injury in periodontal disease pathogenesis: findings from localized aggressive periodontitis. *J Periodontol*. 2003 Jan;74(1):66–75.
5. Miller DR, Lamster IB, Chasens AI. Role of the polymorphonuclear leukocyte in periodontal health and disease. *J Clin Periodontol*. 1984 Jan;11(1):1–15.
6. Delves PJ, Martin SJ, Burton DR, Roitt IM. *Roitt's essential immunology*. 11th ed. Malden, Mass.: Blackwell; 2006.

7. Lamont RJ, Burne RA, Lantz MS, Leblanc DJ. *Oral microbiology and immunology*. 1st ed. Washington, D.C.: ASM Press; 2006.
8. Kobayashi SD, Voyich JM, Burlak C, DeLeo FR. Neutrophils in the innate immune response. *Arch Immunol Ther Exp* (Warsz). 2005 Nov;53(6):505–517.
9. Dale DC, Boxer L, Liles WC. The phagocytes: neutrophils and monocytes. *Blood*. 2008 Aug 15;112(4):935–945.
10. van Eeden SF, Kitagawa Y, Sato Y, Hogg JC. Polymorphonuclear leukocytes released from the bone marrow and acute lung injury. *Chest*. 1999 Jul;116(1 Suppl):43S–46S.
11. van Eeden SF, Terashima T. Interleukin 8 (IL-8) and the release of leukocytes from the bone marrow. *Leuk Lymphoma*. 2000 Apr;37(3-4):259–71.
12. Cannistra SA, Griffin JD. Regulation of the production and function of granulocytes and monocytes. *Semin Hematol*. 1988 Jul;25(3):173–88.
13. Lee A, Whyte MK, Haslett C. Inhibition of apoptosis and prolongation of neutrophil functional longevity by inflammatory mediators. *J Leukoc Biol*. 1993 Oct;54(4):283–88.
14. Colotta F, Re F, Polentarutti N, Sozzani S, Mantovani A. Modulation of granulocyte survival and programmed cell death by cytokines and bacterial products. *Blood*. 1992 Oct 15;80(8):2012–20.
15. Zigmond SH. Ability of polymorphonuclear leukocytes to orient in gradients of chemotactic factors. *J Cell Biol*. 1977 Nov;75(2 Pt 1):606–16.
16. Niedergang F, Chavrier P. Signaling and membrane dynamics during phagocytosis: many roads lead to the phagos(R)ome. *Curr Opin Cell Biol*. 2004 Aug;16(4):422–28.
17. Vieira OV, Botelho RJ, Grinstein S. Phagosome maturation: aging gracefully. *Biochem J*. 2002 Sep 15;366(Pt 3):689–704.
18. Werner E. GTPases and reactive oxygen species: switches for killing and signaling. *J Cell Sci*. 2004 Jan; 15:117(Pt 2):143–53.
19. Kettle AJ, Winterbourn CC. The influence of superoxide on the production of hypochlorous acid by human neutrophils. *Free Radic Res Commun*. 1991;(12-13 Pt 1):47–52.
20. Dinauer MC. Disorders of neutrophil function: an overview. *Methods Mol Biol*. 2007;412:489–504.
21. Delves PJ, Roitt IM. The immune system. First of two parts. *N.Engl.J.Med*. 2000 Jul 6;343(1):37–49.
22. Socransky SS, Haffajee AD, Cugini MA, Smith C, Kent RL,Jr. Microbial complexes in subgingival plaque. *J Clin Periodontol*. 1998 Feb;25(2):134–44.
23. Kinane DF, Karim SN, Garioch JJ, al Badri AT, Moughal N, Goudie RB. Heterogeneity and selective localisation of T cell clones in human skin and gingival mucosa. *J Periodontal Res*. 1993 Nov;28(6 Pt 2):497–99.
24. Van Dyke TE, Levine MJ, Genco RJ. Neutrophil function and oral disease. *J Oral Pathol*. 1985 Feb;14(2):95–120.
25. Van Dyke TE, Serhan CN. Resolution of inflammation: a new paradigm for the pathogenesis of periodontal diseases. *J Dent Res*. 2003 Feb;82(2):82–90.
26. Abiko Y, Nishimura M, Kaku T. Defensins in saliva and the salivary glands. *Med Electron Microsc*. 2003 Dec;36(4):247–52.
27. Tenovuo J, Grahn E, Lehtonen OP, Hyyppa T, Karhuvaara L, Vilja P. Antimicrobial factors in saliva: ontogeny and relation to oral health. *J Dent Res*. 1987 Feb;66(2):475–79.
28. Shimono M, Ishikawa T, Enokiya Y, Muramatsu T, Matsuzaka K, Inoue T, et al. Biological characteristics of the junctional epithelium. *J Electron Microsc*.(Tokyo)2003;52(6):627–39.
29. Ten Cate R. *Oral histology: development, structure, and function*. 5th ed. St. Louis: Mosby; 1998.
30. Dale BA, Kimball JR, Krisanaprakornkit S, Roberts F, Robinovitch M, O'Neal R, et al. Localized antimicrobial peptide expression in human gingiva. *J Periodontal Res*. 2001 Oct;36(5):285–94.
31. Miyauchi M, Sato S, Kitagawa S, Hiraoka M, Kudo Y, Ogawa I, et al. Cytokine expression in rat molar gingival periodontal tissues after topical application of lipopolysaccharide. *Histochem Cell Biol*. 2001 Jul;116(1):57–62.
32. Ebersole JL. Humoral immune responses in gingival crevice fluid: local and systemic implications. *Periodontol 2000*. 2003;31:135–66.
33. Ebersole JL, Taubman MA. The protective nature of host responses in periodontal diseases. *Periodontol 2000*. 1994 Jun;5:112–41.
34. Kornman KS. Host modulation as a therapeutic strategy in the treatment of periodontal disease. *Clin Infect Dis*. 1999 Mar;28(3):520–26.
35. Giannobile WV. Host-response therapeutics for periodontal diseases. *J Periodontol*. 2008 Aug;79(8 Suppl):1592–1600.
36. Gaffen SL, Hajishengallis G. A new inflammatory cytokine on the block: re-thinking periodontal disease and the Th1/Th2 paradigm in the context of Th17 cells and IL-17. *J Dent Res*. 2008 Sep;87(9):817–28.
37. Gemmell E, Yamazaki K, Seymour GJ. Destructive periodontitis lesions are determined by the nature of the lymphocytic response. *Crit Rev Oral Biol Med*. 2002;13(1):17–34.
38. Offenbacher S, Barros SP, Singer RE, Moss K, Williams RC, Beck JD. Periodontal disease at the biofilm-gingival interface. *J Periodontol*. 2007 Oct;78(10):1911–25.
39. Yu JJ, Ruddy MJ, Wong GC, Sfintescu C, Baker PJ, Smith JB, et al. An essential role for IL-17 in preventing pathogen-initiated bone destruction: recruitment of neutrophils to inflamed bone requires IL-17 receptor-dependent signals. *Blood*. 2007 May;109(9):3794–802.
40. Johnstone AM, Koh A, Goldberg MB, Glogauer M. A hyperactive neutrophil phenotype in patients with refractory periodontitis. *J Periodontol*. 2007 Sep;78(9):1788–94.
41. Reid IR, Bolland MJ, Grey AB. Is bisphosphonate-associated osteonecrosis of the jaw caused by soft tissue toxicity? *Bone*. 2007 Sep;41(3):318–20.
42. Seymour GJ, Gemmell E, Reinhardt RA, Eastcott J, Taubman MA. Immunopathogenesis of chronic inflammatory periodontal disease: cellular and molecular mechanisms. *J Periodontal Res*. 1993 Nov;28(6 Pt 2):478–86.
43. Newman MG, Takei C, Carranza FA. *Carranza's Clinical Periodontology*. 10th ed. Edinburgh: Elsevier Saunders; 2006.
44. Kantarci A, Van Dyke TE. Neutrophil-mediated host response to Porphyromonas gingivalis. *J Int Acad Periodontol*. 2002 Oct;4(4):119–25.
45. Burgos RA, Hidalgo MA, Figueroa CD, Conejeros I, Hancke JL. New potential targets to modulate neutrophil function in inflammation. *Mini Rev Med Chem*. 2009 Feb;9(2):153–68.
46. Van Dyke TE, Hoop GA. Neutrophil function and oral disease. *Crit Rev Oral Biol Med*. 1990;1(2):117–33.
47. Aloufi F, Bissada N, Ficara A, Faddoul F, Al-Zahrani MS. Clinical Assessment of Peri-Implant Tissues in Patients with Varying Severity of Chronic Periodontitis. *Clin Implant Dent Relat Res*. E-pub 2008 Apr10.
48. Jansson H. Studies on periodontitis and analyses of individuals at risk for periodontal diseases. *Swed Dent J Suppl*. 2006;(180):5–49.
49. Lang NP, Tonetti MS. Periodontal risk assessment (PRA) for patients in supportive periodontal therapy (SPT). *Oral Health Prev Dent*. 2003;1(1):7–16.
50. Chandra RV. Evaluation of a novel periodontal risk assessment model in patients presenting for dental care. *Oral Health Prev Dent*. 2007;5(1):39–48.
51. Loesche WJ, Giordano JR, Soehren S, Kaciroti N. The nonsurgical treatment of patients with periodontal disease: results after 6.4 years. *Gen Dent*. 2005 Jul-Aug;53(4):298–306; quiz 307.
52. Norderyd O, Hugoson A. Risk of severe periodontal disease in a Swedish adult population. A cross-sectional study. *J Clin Periodontol*. 1998 Dec;25(12):1022–28.
53. Norderyd O, Hugoson A, Grusovin G. Risk of severe periodontal disease in a Swedish adult population. A longitudinal study. *J.Clin.Periodontol*. 1999 Sep;26(9):608–15.
54. Locker D, Leake JL. Risk indicators and risk markers for periodontal disease experience in older adults living independently in Ontario, Canada. *J Dent Res*. 1993 Jan;72(1):9–17.
55. Bender JS, Thang H, Glogauer M. Novel rinse assay for the quantification of oral neutrophils and the monitoring of chronic periodontal disease. *J Periodontal Res*. 2006 Jun;41(3):214–20.

56. Raeste AM, Tapanila T, Tupakka R. Leukocyte migration into the healthy dentulous mouth. A study in children, adolescents and adults. *J Periodontal Res*. 1977 Nov;12(6):444–49.
57. Akpek G, Knight RD, Wright DG. Use of oral mucosal neutrophil counts to detect the onset and resolution of profound neutropenia following high-dose myelosuppressive chemotherapy. *Am J Hematol*. 2003 Jan;72(1):13–19.
58. Cheretakis C, Dror Y, Glogauer M. A noninvasive oral rinse assay to monitor engraftment, neutrophil tissue delivery and susceptibility to infection following HSCT in pediatric patients. *Bone Marrow Transplant*. 2005 Aug;36(3):227–32.
59. Cheretakis C, Leung R, Sun CX, Dror Y, Glogauer M. Timing of neutrophil tissue repopulation predicts restoration of innate immune protection in a murine bone marrow transplantation model. *Blood*. 2006 Oct;108(8):2821–26.
60. Landzberg M, Yuen A, Glogauer M. Point of Care: Are any practical supplementary tests available for diagnostic active periodontal diseases in the dental office? *JCDA*. 2008;74(1): 53–54.

Instructions aux auteures

Le *Journal canadien de l'hygiène dentaire (JCHD)* est un outil de diffusion de la recherche en hygiène dentaire ayant pour but d'enrichir l'ensemble des connaissances au sein de la profession. Mieux encore, il vise à sensibiliser et à intéresser davantage la communauté des hygiénistes dentaires à la recherche.

Publication évaluée par les pairs, le *Journal canadien de l'hygiène dentaire* invite la soumission de manuscrits sur les principes d'hygiène dentaire et leurs applications, notamment la recherche et l'élaboration de théories en matière de formation, de promotion de la santé et de pratique clinique. Les manuscrits doivent traiter de sujets d'actualité, apporter une contribution significative à l'ensemble des connaissances en hygiène dentaire et faire progresser le fondement scientifique de la pratique. Les manuscrits peuvent être présentés en anglais ou en français. Les textes acceptés peuvent faire l'objet de révisions sur le plan de la cohérence, du style, de la grammaire, de la redondance, de la verbosité, ainsi que pour faciliter l'organisation du manuscrit dans son ensemble.

Critères de présentation : Un manuscrit soumis à l'examen du *JCHD* doit être une œuvre originale des auteures, ne pas avoir été présenté ou publié ailleurs sous forme écrite ou électronique ni être en cours d'examen par aucune autre organisation. Cela ne comprend pas les résumés rédigés et présentés lors d'une rencontre scientifique, publiés par la suite.

Demandes de renseignements préalables : Linda Roth, RDH, Directrice des acquisitions, *JCHD*, 96 Centrepointe Drive, Ottawa ON K2G 6B1; Tél. : 613-224-5515, poste 136; Télécopie : 613-224-7283; Courriel : acquisitions@cdha.ca ou lroth@cdha.ca; sans frais : 1-800-267-5235, poste 136

Le *JCHD* accueille vos manuscrits sur les sujets que voici :

1. **Le professionnalisme :** textes traitant d'éthique, responsabilité sociale, problèmes juridiques, entrepreneuriat, gestion, maintien de la compétence, assurance de la qualité et autres sujets dans le cadre général de la pratique professionnelle.
2. **La promotion de la santé :** textes traitant des politiques et des divers éléments essentiels au développement des capacités des personnes, des groupes et de la société en général. À partir des éléments clés de la charte fédérale, cela peut comprendre les politiques en matière de santé, la création de milieux de soutien de l'apprentissage, les capacités de développement, le renforcement de l'action communautaire et la réorientation des services de santé buccale.
3. **L'éducation :** textes portant sur l'enseignement et l'apprentissage aux niveaux des personnes, des groupes et de la société. Cela comprend l'éducation des clients, des autres professionnels ainsi que les programmes d'intégration dans la pratique.
4. **La pratique clinique :** textes traitant des procédures des soins interceptifs, thérapeutiques, préventifs et habituels pour soutenir la santé buccale.
5. **La pratique communautaire :** textes traitant des programmes de santé buccale, y compris l'estimation, la planification, l'application et l'évaluation.
6. **Les sciences de la santé buccale :** textes sur les connaissances scientifiques soutenant la pratique de l'hygiène dentaire.
7. **La théorie :** textes traitant des notions et des processus d'hygiène dentaire.

Types de manuscrits acceptés pour soumission :

1. Comptes-rendu d'études et de recherches – au plus 6 000 mots avec un maximum de 150 références. Résumé d'au plus 300 mots.
2. Revue de la littérature – au plus 4 000 mots et avec toutes les références nécessaires. Résumé d'au plus 250 mots.
3. Exposé de principe – d'au plus 4 000 mots avec un maximum de 100 références. Résumé d'au plus 250 mots.
4. Observation – entre 1 000 et 1 200 mots et un maximum de 25 références et 3 auteures. Résumé de 100 mots.
5. Article de fond – sur invitation seulement, possibilité de 1 000 à 1 500 mots, avec toutes les références nécessaires. Résumé non nécessaire.
6. Tribune libre – limite de 500 mots avec un maximum de 5 références et 3 auteures. Résumé non nécessaire.

Évaluation par les pairs : La rédactrice scientifique fait un premier choix des articles quant à leur pertinence. Les articles retenus sont alors soumis à un comité d'évaluation par les pairs formé d'au moins deux personnes. On peut aussi solliciter au besoin un avis de spécialiste, de la statistique par exemple.
Révision : Lorsqu'un manuscrit est renvoyé aux auteures correspondantes pour révision, la version révisée doit être présentée dans un délai de 6 semaines après réception de l'avis des lectrices spécialisées. Les auteures indiquent ensuite par courrier si elles acceptent ou réfutent les révisions. Le retour d'un manuscrit révisé est alors considéré comme étant une nouvelle soumission. La directrice de l'édition peut, à sa discrétion, allouer sur demande plus de temps pour la révision.
Un **appel** de réévaluation peut être adressé par courriel à la rédactrice scientifique (journal@cdha) qui le fera suivre au Comité consultatif de la recherche de l'ACHD. Les membres du comité peuvent acquiescer à la demande ou la rejeter, mais les auteures ne pourront pas demander un deuxième appel.

	Vérification	Éléments à appliquer
1		Caractères standard comme Arial, New Times Roman, Verdana en 10–12 points.
2		Texte en double espace dans le corps du manuscrit.
3		Marge standard de 1 pouce (2,5 cm) : haut, bas, gauche, droite.
4		Numérotation consécutive des pages, à partir de la page de titre.
5		Lettre de présentation précisant l'originalité du texte, tout conflit d'intérêt et les données pour vous contacter.
6		Placement des figures, tableaux, graphiques, photos à la fin du manuscrit.
7		Autorisation signée pour tout texte ou toute photo du patient ou client.
8		Crédits pertinents pour toutes illustrations déjà publiée. Vérification dans Internet des restrictions et conditions d'utilisation des éditeurs ?
9		Coordonnées de communication des auteurs en page de titre.
10		Titres universitaires des auteurs et organismes auxquels ceux-ci sont attachés.
11		Lettre de présentation contenant les noms et coordonnées de 2 réviseurs possibles et consentants pour votre manuscrit.
12		Mots clés qu'on trouve dans la base de données de MeSH de Search "MeSH" : http://www.ncbi.nlm.nih.gov/sites/entrez
13		Utilisation uniquement du style de référence Vancouver dans le manuscrit : http://www.nlm.nih.gov/bsd/uniform_requirements.html
14		Utilisation des titres abrégés des journaux de la base de données PubMed, sous recherche "Journals" : http://www.ncbi.nlm.nih.gov/sites/entrez

Independent
Practice Success

Interested in having your own independent dental hygiene practice?

Then you don't want to miss this one-day workshop jointly hosted by
Canadian Dental Hygienists Association
and
Ottawa Dental Hygienists Society

Independent Practice:

Exploring the Possibilities for Self Initiating Dental Hygienists

Saturday, 17 October 2009
RA Centre
2451 Riverside Drive, Ottawa, Ontario

If you think you might be ready to go out on your own but don't know where to start, this workshop is for you.

- Learn from **knowledgeable experts** in the fields of both dental hygiene and regulated health practices.
- Participate in the panel discussion with dental hygienists **who own a dental hygiene business**.
- Find out about everything from **equipment and facility needs, timelines** and **financial projections** to **risk management and liability**.

Watch our websites for registration

CDHA ACHD ODHS

Visit cdha.ca or odhs.ca

Les composantes du manuscrit :

1. **Page de titre :** Le titre doit désigner clairement le contenu de la soumission en 12 mots. Il devrait être suivi du nom de chacune des auteurs (prénom, initiale et nom de famille) ainsi que leurs titres universitaires et leurs institutions. Nom de l'auteure correspondante, adresse postale et courriel. Toutes les auteures doivent avoir participé suffisamment à l'ouvrage pour en assumer le contenu.
2. **Résumé :** Il ne doit contenir ni références ni titres de section. En voici les formats typiques :
   a. **Compte-rendu d'étude et de recherche :** Contexte (question à l'étude, problème traité et raisons); Méthodes (comment l'étude a été effectuée); Résultats (principales données statistiques); Examen et conclusion (ce que les auteures ont tiré des résultats).
   b. **Revue de la littérature :** Contexte (sujet ou procédure examinés); Méthodes (stratégie suivie, avec données de base); Résultats et discussion (constatations et analyse de la documentation); Conclusion (ce que les auteures ont tiré de l'analyse).
   c. **Exposé de principe :** (même structure que la précédente)
   d. **Observation :** Introduction (nature générale de la condition ou du programme); Description du cas (avec données); Discussion (du cas fondée sur la documentation), Conclusion.
3. **Mots clés :** Fournir une liste de 6 mots clés tout au plus ou de courtes phrases extraites du texte aux fins d'indexation. On utilisera de préférence les termes de la liste *Index Medicus* du *Medical Subject Headings* (MeSH).
4. Corps du **texte :** Structuration logique de l'information. Tout fait prétendument réel doit l'être au moment de la rédaction.
5. **Remerciements :** Reconnaissance de l'aide ou du soutien apporté par les personnes, organisations, institutions ou entreprises. Les personnes ou organismes mentionnés doivent avoir consenti, document à l'appui, à la publication de leurs noms, vu que cela peut laisser entendre qu'elles adhèrent au contenu, aux données ou aux conclusions de l'article.
6. **Maquette :** Elle comprend les illustrations, figures, photos, graphiques et toute autre expression graphique qui soutiennent ou rehaussent le texte dans le format de leurs fichiers originaux (fichiers sources).
   - Sont acceptables les formats de fichier .eps, .pdf, .tif, .jpg, .ai, .cdr haute résolution, prêts à imprimer :
     i. minimum de 300 dpi pour les gammes de gris et les demi-teintes couleurs,
     ii. 600 dpi pour les dessins au trait,
     iii. 1 000 dpi au minimum pour les maquettes pixélisées.
   - Les illustrations en couleur doivent toutes être en mode couleur CMYK (et non en RGB).
   - Elles devraient être numérotées à la suite les unes des autres et indiquées dans le texte.
   - Les auteurs doivent indiquer dans la légende la source des illustrations publiées antérieurement.
   - La rédaction se réserve le droit de reporter la publication d'un manuscrit accepté s'il survient des retard dans l'obtention des documents d'impression dont elle doute de la qualité.
7. **Données et tableaux :** Présentation en format Excel ou Word. Ces tableaux et données peuvent aussi être inclus à la fin du document Word.
8. **Abréviations et unités :** Elles doivent être conformes au Système international d'unités (SI). On peut utiliser les symboles SI et les symboles des éléments chimiques sans les définir dans le corps de l'article. Les abréviations doivent être indiquées entre parenthèses après la première mention de l'expression concernée dans le texte; ne pas dresser de liste d'abréviations.
9. **Information supplémentaire :** Toute information supplémentaire doit être fournie dans son format définitif, car elle ne sera pas corrigée et paraîtra en ligne exactement comme elle aura été présentée. Veuillez vous renseigner auprès de la Rédaction avant d'envoyer des fichiers de plus de 1 Mbit.
10. **Style des références et citations :** La présentation des références s'inspire du style Vancouver au http://www.nlm.nih.gov/bsd/uniform_requirements.html Les références devraient être numérotées dans l'ordre où elles sont citées dans le texte. Une référence citée plus d'une fois dans un même texte conservera toujours son numéro et l'auteur en fera rappel en utilisant des adverbes ou abréviations telles que *op cit*, *ibidem* ou *ibid.* On utilisera des chiffres arabes en exposant pour identifier les références dans le texte (e.g. [1,2] ou [3–6]). La liste de la section Références suivra l'ordre numérique paraissant dans le texte.

(Version condensée, avril 2009)

Interdisciplinary health care

CDHA staff

Interdisciplinary health care method relies on a formal integration of services of all practitioners when developing a comprehensive care plan. It requires coordination and collaboration on the part of contributors. Expectations of each team member and agreement on outcomes of care must be clear to all, especially to the client. Characteristics required of interdisciplinary team members include commitment, self-confidence, and competence.[1]

Let's examine the hypothetical situation of Mr. Fernie, aged 79, who has been admitted to a rehabilitation facility for treatment of partial paralysis, with speech and eating difficulties following a stroke. The team providing daily care for Mr. Fernie might involve such diverse health professionals as a nurse, physiotherapist, speech therapist, occupational therapist, and dietician. A dental hygienist, responsible for overseeing the oral hygiene component, must be prepared to communicate and consult with other members of the team in order to develop and initiate an appropriate care plan for this client. There must be an understanding of the roles of all the professionals engaged in Mr. Fernie's rehabilitation, and a willingness to share individual expertise through consultation. Mr. Fernie's interdisciplinary health care team would be a network as shown in figure 1.

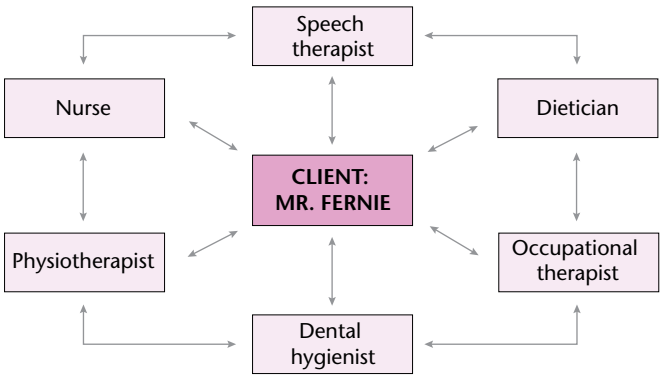

Figure 1: Interdisciplinary care

How is this collaborative model to be accomplished? Nowjack-Raymer[2] outlines several guiding principles for successful teamwork and presents a comparison of traditional versus collaborative teams, shown in figure 2. Team members must understand and respect the roles of others, and be able to work both within and between organizations, taking responsibility for complementary tasks. The guiding principles that are emphasized include both formal education and the opportunity to practise teamwork and conflict resolution skills.

CDHA welcomes your feedback: bleggett@cdha.ca

	Traditional team	Collaborative team
Purpose	Specific treatment	Comprehensive care
Tasks	Clearly delineated	May vary and require clarification to other disciplines
Priorities	Same for all members	May vary by discipline
Personnel functions	Roles clearly defined	May overlap; some ambiguity exists
Communication	One way and limited	Group discussion and problem solving
Leadership	Hierarchical	Shifting; team members function as colleagues
Decision making	Autocratic	No clear lines of authority; frequent compromise; encourages innovation

Figure 2: Comparison of team roles

Interprofessional education

One component of the Pan Canadian Health Human Resources Strategy is the Interprofessional Education for Collaborative Patient-Centred Practice Initiative (IECPCP) designed to ensure that health providers have the necessary knowledge and training to work effectively on interdisciplinary teams within the evolving health care system. Health Canada funds the Canadian Interprofessional Health Collaborative—a collective of partners advancing the evidence base related to IECPCP, and working towards improved health education and health services. Reports, learning activities, and related publications can be accessed on the Health Canada website at: http://www.hc-sc.gc.ca/hcs-sss/hhr-rhs/strateg/interprof/index-eng.php

George Brown College, in Toronto, with 2,500 full time students enrolled in 17 different health sciences programs, is one institution that has established a centre for Interprofessional Health Care Education. Its objective is to enable graduates in health disciplines to successfully participate in interdisciplinary health care practice, with the ultimate goal of improving treatment outcomes. Educational activities range from shared learning in the classroom and laboratories to collaborative practice of two or more disciplines in clinics and community settings. Information on these experiences and activities can be accessed at: http://www.georgebrown.ca/healthsciences/ipe.aspx

The emergence of independent practice for dental hygienists provides the opportunity and necessity to participate in interdisciplinary health care teams. A shared vision of such collaborative, client centred care can result in improved satisfaction and mutual respect among professionals, effective use of human resources, and improved access to oral health care.

REFENCES

1. Spear F. Forming an Interdisciplinary Team. *J Am Dent Assoc.* 2005;136:1463.
2. Nowjack-Raymer RE. Teamwork in Prevention: Possibilities and Barriers to Integrating Oral Health into General Health. *Adv Dent Res.* 1995;9(2):100–105.

Veterans Affairs Canada: an update

CDHA's Independent Practice Advisor, Ann E. Wright

In a memo to CDHA, Dr. Brian Barrett, National Dental Consultant, Veterans Affairs Canada (VAC), verified VAC's interest in working with dental hygienists. Dental hygienists were added to the VAC provider network in 2007. In Dr. Barrett's words this was done to "improve our clients' access to care in LTC in a fair and equitable manner by using providers able to perform the services legally in a province". At the same time, Dr. Barrett indicates that VAC has the additional requirement of fiscal responsibility when reviewing its program.

While the program has significant treatment limitations and ongoing concerns for CDHA and dental hygienists across Canada, it does enable dental hygienists to provide oral care to veterans directly, especially to those veterans who are most vulnerable and are residents in long term care homes. Dr. Barrett further emphasized that dental hygienists must follow the VAC guidelines, and this article attempts to guide the dental hygienist practitioner through VAC rules and paperwork. It is important to note that dental hygienists are required to correspond directly with Medavie Blue Cross for payment, and to VAC for predeterminations beyond published limits. Clients are not expected to pay for this treatment themselves.

The most recent information received from VAC, including guidelines for submitting dental hygiene treatment, is given below. Readers are directed to the *VAC Provider Information Manual* and the *Benefit Codes and Payment Guidelines* for detailed information: http://www.vac-acc.gc.ca/providers/sub.cfm?source=pro_infoguide

Identifying the program: The program of choice (POC), #4 Dental Services, offers basic dental and preauthorized comprehensive dental services for both pensioners and other eligible clients.

Limits: The provider must follow the fee and frequency limits. Any procedures that exceed VAC limits must be specified on a pretreatment plan and payment, preauthorized by a departmental dental consultant before treatment begins. Treatment services are limited for dental hygiene. Examples of the treatment limits are:

- a maximum of 8 units of scaling and/or root planning every calendar year
- once every 9 months for assessment and polish/fluoride treatment
- one claim only for oral hygiene instruction.

Client's eligibility: Not all clients are eligible for all benefits of all programs. Clients eligible for health care benefits or services are provided with a VAC Health Care Identification Card. The identification card carries the:

- Client's name: the only person who can use this card.
- Client's number, which begins with "K".

Other points to note are:

- Use the client's number when you request information about a specific client.
- The card must be signed and presented each time the client receives services.
- Clients who are eligible for POC #4 (dental services) must have an "A", "B" or both on the identification card.
- Group "B" clients must be referred to the Provincial Health Care Plan where such a plan exists.
- The province is billed for its portion and VAC pays the remaining balance.

Claim form: Approved providers will be issued a *Provider's Guide Information Package* by Medavie Blue Cross. Providers are instructed to use either the Medavie Blue Cross claim form, or the National Dental Hygienists claim form. Your signature and the client's signature must appear in the fields indicated on the claim form. Additional claim forms can be obtained by completing the reorder form included in the package.

Claims submission: Claims must be submitted to the VAC agent. The administration of payment for the program is handled by Medavie Blue Cross through an automated service known as the Federal Health Claims Processing System, or FHCPS. Claims submitted after 18 months will be rejected. Medavie Blue Cross will directly reimburse dental hygienists for covered services. VAC pays 100 per cent of provincial fee guides for covered benefits. To guarantee that your claim is paid promptly, please ensure that the dental hygiene fee codes are used on the claim form. If there is any doubt as to a client's eligibility for care, you are required to send a treatment plan for preauthorization to VAC directly. All enquiries should be sent to: Dental TAC PO Box 7700, Charlottetown PE, C1A 8M9, or toll free: 1-866-811-6060.

Claim payment: Cheques and payment summaries will be issued every two weeks. As a participating provider, you are required to accept VAC Health Care Identification Cards for eligible clients in lieu of cash payment for eligible benefits.

CDHA is committed to improving access to care and to working with all governmental agencies. If you need further assistance in working with VAC, or have additional questions, please contact CDHA.

CDHA welcomes your feedback: awright@cdha.ca

Position for commercial advertisement

2010 Dental Hygiene Programs Recognition Award

Prix de reconnaissance 2010 pour les programmes en hygiène dentaire

The Canadian Dental Hygienists Association is pleased to announce the 2010 Dental Hygiene Programs Recognition Award. This award is designed to recognize dental hygiene programs whose faculty achieves 100% membership in the CDHA. A certificate of recognition will be awarded to honour these programs for demonstrating such outstanding commitment to their national association and acting as professional role models for their students. The deadline for submissions is **4 December 2009**. Entry details are available on the CDHA members' web site, in the "*Networking and Recognition*" section.

L'Association canadienne des hygiénistes dentaires est heureuse d'annoncer la création du Prix de reconnaissance pour les programmes en hygiène dentaire. Ce prix est conçu afin de reconnaître les programmes en hygiène dentaire dont 100 % du corps professoral est membre de l'ACHD. Un certificat de reconnaissance sera remis pour mettre à l'honneur les programmes dont les membres font preuve d'un engagement exceptionnel envers leur association nationale et jouent un rôle de modèles professionnels pour leurs étudiants et étudiantes. La date limite pour les inscriptions est le **4 décembre 2009**. Les détails concernant les procédures d'inscription sont affichés sur le site Web réservé aux membres de l'ACHD, à la section « *Networking and Recognition* ».

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES
CDHA ACHD

BE CONNECTED

COMMUNITY

I AM CONNECTED

to my professional community

With over 14,500 members and growing, CDHA is my link to a nationwide community of professionals. Whether I want to advance my skills, learn about the latest innovations, or research career opportunities, CDHA connects me with the tools I need to succeed. My CDHA membership offers comprehensive insurance, continuing education, group discounts, and so much more. Through CDHA, I am part of a network that shares ideas, strengthens personal bonds, and stands up for oral health. Join the voice of dental hygienists in Canada. Join CDHA—be connected.

EDUCATION

I am connected. Are you?

CDHA ACHD

THE CANADIAN DENTAL HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE DES HYGIÉNISTES DENTAIRES

1-800-267-5235 • **www.cdha.ca**


ADVOCACY
BENEFITS
BE CONNECTED

National licence for Cochrane Library

The Canadian Cochrane Network and Centre is pleased to announce, that in partnership with the Canadian Health Libraries Association, a pilot for a national licence to *The Cochrane Library* has been successfully secured. This means that all dental hygienists now have access to the full content of the *Library* and will save valuable time to research the best patient treatment options through easy access to this wealth of information.

Cochrane Corner

CDHA members need look no further than their association's website for Cochrane information. Check the Members Only section of www.cdha.ca

Licence nationale de *La Bibliothèque Cochrane*

Le Réseau-centre canadien Cochrane est heureux d'annoncer que, en partenariat avec l'Association des bibliothèques de la santé du Canada, il a réussi à obtenir une licence nationale pour *La Bibliothèque Cochrane*. Grâce à ce projet pilote, toutes les hygiénistes dentaires ont désormais accès à l'intégralité de *La Bibliothèque Cochrane*. Les professionnels de la santé gagneront ainsi un temps précieux dans la recherche des meilleurs moyens de traiter les patients, grâce à la facilité d'accès de cette mine d'information.

« **Cochrane Corner** »

Les membres de l'ACHD n'ont plus à scruter le site Web de leur association pour savoir ce qui se passe à la Collaboration Cochrane. Voir la section réservée aux membres à www.cdha.ca

Position for commercial advertisement

Electronic health records

Wednesday, 27 May 2009

Excerpts of the news release from http://www.cbc.ca/health/story/2009/05/27/f-electronic-health-records.html

Canadians are heavy users of the health care system. Every year, there are 322 million office based visits to the doctor. The vast majority of them — 94 per cent — result in handwritten paper records.

Those records — your health history — normally stay in a file folder in your doctor's office, inaccessible to a medical professional who might appreciate the information they contain when you're facing a medical emergency and are unable to communicate.

Making those records available in an electronic format has been on the federal government's to-do list for nearly twenty years. But it took until 11 September 2000, for Ottawa to commit $500 million for "an independent corporation mandated to accelerate the development and adoption of modern systems of information technology, such as electronic patient records, so as to provide better health care." Canada Health Infoway received $2 billion towards the revolutionizing of the nation's health records. While the agency's goal is e-health records for all Canadians by 2016, so far only five per cent of records are electronic. But the agency expects half of health records to be electronic by the end of 2010. According to the agency, in the absence of a comprehensive e-health record system, for every 1,000:

- Hospital admissions: 75 people will suffer an adverse drug event.
- Laboratory tests performed: up to 150 will be unnecessary.
- Emergency room visits: 320 patients will have an information gap, resulting in an average increased stay of 1.2 hours.

But the agency says by the end of 2010 Alberta, Prince Edward Island, and the Northwest Territories should have all the elements of a basic infrastructure for delivering electronic health records in place. Quebec and British Columbia are not far behind. Ontario has hit a few potholes on the e-health information highway.

The agency also notes that the move towards digital X-rays could improve the productivity of radiology specialists by 25 to 35 per cent. Already, 80 per cent of X-rays in Canada are digitized.

Machine translation

CDHA staff

Machine translation (MT) enables users to have a general understanding of a piece of foreign text. It is a useful online tool and should only be used for a general idea as to the meaning of the original text. MT is not perfect. Its results do not compete with human translation. But not all of us have a gift for translation and sometimes a translation, even with an error, can come handy. In general, Internet free service provided by MT software is limited in the number of characters they permit to translate.

How do you get the best of MT, especially when it is free online? Here are a few tips sourced on the Net.

- Keep sentences short and simple.
- Avoid complex sentences as these confuse translation software.
- Use grammar and spell check tools before submitting your material, also known as source text, for translation of the best possible quality.
- Use correct punctuation.
- Insert special characters such as accents. Be accurate to your source text.
- If your text has words or names that you don't want translating, place an "x" at the beginning and end of the word or phrase. For example, "IBM" would become "xIBMx" as it is a company name and doesn't require translation.
- Avoid ambiguous words. English words ending in "ing" are ambiguous. For example, the word "swimming" can be a noun or a verb, and may have different translation depending on its part of speech. Whenever possible, choose alternatives to "ing" forms.
- Avoid contracted words; for example, write *it is* rather than *it's* and *cannot* rather than *can't*.
- After you've translated some text, you could click the button marked "Search the web with this text" in order to launch a search using the translation results as your query.
- You could compare a translated web page with the original by clicking "View page in its original language."

MT operates on one or a combination of these methods:

- Methods based on dictionary entries.
- Methods based on statistical rules.
- Methods based on linguistic rules.

Given enough data, machine translation programs often work well enough for a fluent user of one language to get the approximate meaning of what is written by the other native speaker.

MT usually takes its users through three simple steps:

1. Choose the language you want to translate from.
2. Choose the target language.
3. Enter a text or copy and paste from any of your applications, and click on "Go".

CDHA welcomes your feedback: journal@cdha.ca

Some popular and free MT sites are identified below:

http://www.freetranslation.com/

This site from SDL has high claims and touts itself as the world's #1 for professional language translation offering high quality language translations.

http://babelfish.yahoo.com/

Yahoo! Babel Fish provides text and web page language translation tools.

http://translation2.paralink.com/

Multilingual translation software for English, French, German, Italian, Portuguese, Russian and Spanish languages.

http://translation.langenberg.com/

If your requirement is minimalistic, then this is the site for a word or a phrase translation.

http://www.systranet.com

Systran is one of the oldest and best known MT systems. In the past it has several times been rated highest in comparisons.

http://babelfish.altavista.com/

A site offered by AltaVista that uses the Systran translation engine.

http://www.translatum.gr/dics/mt.htm

A portal that uses Systran and that can translate either a web page or text that you type or copy into their box.

http://www.reverso.net

This site is designed to translate short texts.

http://www.word2word.com/free.html

A portal that gives access to various machine translation engines, including the ones mentioned here.

http://www.translation-guide.com/free_online_translations.htm

It offers the choice of 19 languages to translate a paragraph or a Web page.

http://translationbooth.com/tb/aojb/Tpl/freeTranslation/index.html

TranslationBooth provides access to over 800 language combinations making it the most useful free machine translation service available on the Web.

CDHA became an affiliate member of the Canadian Cochrane Network and Centre in March 2008. CDHA is pleased to republish selected bilingual Cochrane Review abstracts and summaries related to dental hygiene without any modification. These review abstracts and summaries are the copyright of Cochrane Collaboration, and are reproduced with permission.

Based on the best available information about healthcare interventions, Cochrane reviews explore the evidence for and against the effectiveness and appropriateness of treatments (for example, oral health products, scaling, smoking cessation intervention) in specific circumstances.

Home-based chemically-induced whitening of teeth in adults

Hana Hasson[1], Amid Ismail[1], Gisele Neiva[1]
[1]Department of Cariology, Restorative Sciences and Endodontics, School of Dentistry, University of Michigan, Ann Arbor, Michigan, USA

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD006202. This version first published online: 18 October 2006 in Issue 4, 2006. Last assessed as up-to-date: 20 August 2006.

Plain language summary

Tooth whitening products for use at home work over a short period of time but users should be aware of common side effects and note that long-term data on their use are not yet available.

Products for whitening teeth at home are available 'over-the-counter' or from dentists. This review looks at whether such tooth whitening products work and, if so, which are more effective. The review focuses on products which have a chemical, bleaching action rather than an abrasive action. Results found that over a short period of time these products do work, and that there are differences between the products, mainly due to the levels of active ingredients, hydrogen peroxide and carbamide peroxide. People should be aware of common side effects such as tooth sensitivity and irritation to the gums and note that long-term data on the use of such products are not yet available.

Abstract

Background

During the last decade tooth whitening products have become widely available in the USA for sale over-the-counter or dispensed by dentists for use at home. With the current rapid growth in demand for tooth whitening it is imperative that the dental community base its recommendations to patients on sound scientific evaluations conducted in well-designed and independent studies.

Objectives

To evaluate the effectiveness (versus a placebo or another active product) and side effects of over-the-counter or dentist-dispensed chemically-based tooth whitening products designed for home use.

Search strategy

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2005, Issue 3); MEDLINE (January 1966 to September week 2 2005); and EMBASE (1988 to week 39 2005). The tables of content of selected dental journals published since 1995 were searched for additional references. Written requests for additional studies and information were mailed to experts in this area of research. After a final set of studies was identified, the list of references reported in the included reports was reviewed to identify additional studies. Studies published in English and non-English were considered in this review.

Selection criteria

Randomised controlled trials and quasi-randomised controlled trials of dentist-dispensed or over-the-counter tooth whitening products with a chemical action (rather than abrasive action), for home use.

Data collection and analysis

Screening of titles and abstracts, data extraction and quality assessment were undertaken independently and in duplicate.

Main results

A total of 416 articles were identified, 25 of which met the inclusion criteria and presented data that could be used in the analysis. All included trials measured effectiveness immediately after 2 weeks of product application. Only 13 studies reported outcome data 1 week after the 2-week application period, and of those only six reported outcome data after 1 month or longer. Four of the included trials were assessed as at moderate risk of bias and the remainder at high risk of bias. All trials were sponsored by the manufacturers of tooth whitening products.

Six trials compared different whitening products (gel in trays, paint-on films and whitening strips) with placebo/no treatment and all analyses showed the products to be effective, although most comparisons were based on single trials.

Nineteen trials compared different whitening products with each other. There was only one meta-analysis which included more than one trial which showed statistically

significant differences between the different whitening products. Strips (5.5% to 6.5% hydrogen peroxide (HP)) are more effective than gel in tray at 10% carbamide peroxide (CP) mean difference 1.82 (95% confidence interval (CI) 0.26 to 3.38). All of these trials were assessed as of high risk of bias.

'Mild' to 'moderate' tooth sensitivity and gingival irritation were the most common side effects. The whitening strips and products with high concentrations of HP caused more users to complain from tooth sensitivity. The protocols for preparation of participants prior to bleaching were inconsistent among the studies. Data on baseline scores of whiteness were not reported by the majority of the studies. The current evidence base on tooth whitening products suffers from methodological and publication biases.

Authors' conclusions

There is evidence that whitening products work when compared with placebo/no treatment. There are differences in efficacy between the products, mainly due to the levels of active ingredients, hydrogen peroxide and carbamide peroxide. All trials were however short term and the majority of the studies were judged to be at high risk of bias and were either sponsored or conducted by the manufacturers. There is a need for pragmatic long-term and independent clinical studies that include participants representing diverse populations. There is also a need to evaluate long-term harms. Several studies reported (where measured) the common side effects of tooth sensitivity and gingival irritation, and people should be informed of this.

Version in French follows.

Blanchiment dentaire chimique, à la maison, chez l'adulte

Résumé en langue simplifiée

Les produits de blanchiment dentaire utilisée à la maison sont efficaces à court terme mais les utilisateurs devraient en connaître les effets secondaires éventuels et être conscients que les effets à long terme ne sont pas encore connus.

Certains produits de blanchiments sont en libre accès, d'autres sont administrés par le dentiste. Cette revue systématique de la littérature a pour but de déterminer si les produits utilisables à la maison sont efficaces, et, si tel est le cas, quels produits sont les plus efficaces. Cette revue systématique s'intéresse aux produits qui ont une action chimique et non une action abrasive. Les résultats montrent qu'à court terme ces produits sont efficaces et qu'il existe une différence d'efficacité entre les produits, essentiellement due aux quantités de composants actifs, peroxyde d'hydrogène et peroxyde de carbamide. Les patients devraient être conscients des effets secondaires possibles (le plus souvent sensibilités dentaires et irritations de la gencive), et de l'absence de données à long terme sur l'utilisation de ces produits.

Résumé

Contexte

Depuis les dix dernières années, les produits de blanchiment dentaire sont devenus très accessibles aux Etats-Unis, en vente libre ou par l'intermédiaire d'un dentiste pour une utilisation à la maison. La demande actuelle pour le blanchiment dentaire augmente rapidement, il est donc impératif que la communauté dentaire établisse des recommandations à partir d'évaluations scientifiques d'études correctement planifiées et menées de façon indépendante.

Objectifs

Evaluer l'efficacité (versus un placebo ou un autre produit actif) et les effets secondaires des produits de blanchiment en vente libre ou administrés par le dentiste pour une utilisation à la maison.

Stratégie de recherche

*Nous avons fait nos recherches dans The Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library *2005, Issue 3), MEDLINE (de Janvier 1966 à la deuxième semaine de Septembre 2005), et EMBASE (de 1988 à la semaine 39 de 2005). Les sommaires des périodiques dentaires sélectionnés et publiés depuis 1995 ont été examinés à la recherche d'éventuelles références supplémentaires. Des e-mails ont été envoyés aux experts de ce domaine pour obtenir des études et/ou et des informations supplémentaires. A partir d'un ensemble d'études sélectionnées, les listes de références de ces études ont été passées en revue à la recherche d'études supplémentaires. Les études publiées en anglais et en langue étrangère ont été prises en considération dans cette étude.*

Critères de sélection

Essais cliniques randomisés et essais cliniques quasi-randomisés évaluant des produits de blanchiment avec une action chimique (et non abrasive) en libre accès ou administrés par le dentiste pour utilisation à la maison.

Recueil des données et analyse

La recherche dans les titres, les résumés, l'extraction des données et l'évaluation de la qualité ont été faites de façon indépendante et en double.

Résultats principaux

Au total, 416 articles ont été sélectionnés. Parmi eux, 25 remplissaient les critères d'inclusion et présentaient des données utilisables pour l'analyse. Tous les essais inclus dans la revue évaluaient l'efficacité immédiate du produit après 2 semaines d'application. Seulement 13 études rapportaient des résultats 1 semaines après les 2 semaines d'application et parmi elles, seulement 6 études rapportaient des résultats après 1 mois ou plus. Le risque de biais a été considéré comme modéré pour 4 des études incluses et élevé pour toutes les autres. Tous les essais ont été financés par les fabricants de produits de blanchiment.

Six essais comparaient différents produits de blanchiment (gel en gouttière, film étalé au pinceau, bandelettes de blanchiment) à un placebo ou à l'absence de traitement. Toutes les analyses ont montré que les produits étaient efficaces, bien que la plupart des comparaisons étaient faites sur des essais simples.

Dix-neuf études comparaient différents produits de blanchiment entre eux. Une seule meta-analyse a inclus plus d'une étude montrant des différences statistiquement significatives entre les différents produits de blanchiment. Les bandelettes (de 5.5% à 6.5% de peroxyde d'hydrogène) sont plus efficaces que le gel en gouttière à 10% de peroxyde de carbamide. Le risque de biais a été considéré comme élevé pour tous ces essais.

Les effets secondaires les plus rencontrés étaient des sensi-

bilités dentaires légères à modérées et des irritations gingivales. Les bandelettes de blanchiment et les produits à forte concentration en peroxyde d'hydrogène suscitaient plus de plaintes de sensibilités dentaires de la part des utilisateurs. Les protocoles de préparation des participants avant blanchiment étaient de façon générale incompréhensibles. Dans la majorité des études les teintes de départ n'ont pas été enregistrées. Les preuves actuelles sur les produits de blanchiment souffrent de biais de méthodologie et de biais de publication.

Conclusions des auteurs

L'efficacité des produits de blanchiment dentaire comparés à un placebo ou à l'absence de traitement semble évidente. Il existe des différences d'efficacité entre les produits, différence essentiellement due aux quantités de composants actifs, peroxyde d'hydrogène ou peroxyde de carbamide. Néanmoins, tous les essais ont évalué l'efficacité à court terme, la majorité des études ont été financées par les fabricants et leur risque de biais a été jugé élevé. Des études cliniques indépendantes d'évaluation des résultats à long terme qui inclurait des patients représentant des populations variées sont nécessaires. L'évaluation des effets secondaires à long terme est également nécessaire. Plusieurs études ont rapporté (lorsque mesurés) des effets secondaires régulièrement rencontrés, des sensibilités dentaires et des irritations gingivales. Les utilisateurs des produits de blanchiments devraient être informés de ces effets secondaires éventuels.

Manual versus powered toothbrushing for oral health

Peter Robinson[1], Scott A Deacon[2], Chris Deery[3], Mike Heanue[4], A Damien Walmsley[5], Helen V Worthington[6], Anne-Marie Glenny[7], Bill C Shaw[6]

[1]Department of Dental Public Health, School of Clinical Dentistry, Sheffield, UK. [2]SouthWest Cleft Unit, Frenchay Hospital, Bristol, UK. [3]Department of Paediatric Dentistry, Edinburgh Dental Institute, Edinburgh, UK. [4]Dental Surgery, Private Dental Practice, Sheffield, UK. [5]Department of Prosthetic Dentistry, School of Dentistry, Birmingham, UK. [6]Cochrane Oral Health Group, MANDEC, School of Dentistry, The University of Manchester, Manchester, UK. [7]Cochrane Oral Health Group, MANDEC, School of Dentistry, The University of Manchester, Manchester, UK

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD002281.pub2. This version first published online: 20 April 2005 in Issue 2, 2005. Last assessed as up-to-date: 16 February 2005.

Plain language summary

When compared to manual toothbrushes, powered toothbrushes with a rotation oscillation action provide protection against gum inflammation in the long and short term and better plaque removal in the short term.

Removing dental plaque by toothbrushing helps prevent gum inflammation (gingivitis). Toothbrushing with a fluoride toothpaste prevents tooth decay.

Powered toothbrushes simulate manual toothbrushing in different ways (such as moving side to side or circular motions). The review of trials found that only rotation oscillation (where brush heads rotate in one direction and then the other) is better than manual toothbrushes at removing plaque and reducing gum inflammation, and is no more likely to cause injuries to gums. Long-term benefits of this for dental health are unclear.

Abstract

Background

Removing dental plaque may play a key role maintaining oral health. There is conflicting evidence for the relative merits of manual and powered toothbrushing in achieving this.

Objectives

To compare manual and powered toothbrushes in relation to the removal of plaque, the health of the gingivae, staining and calculus, dependability, adverse effects and cost.

Search strategy

We searched the Cochrane Oral Health Group Trials Register (to July 2004) and CENTRAL (*The Cochrane Library* 2004, Issue 2); MEDLINE (January 1966 to week 2 June 2004); EMBASE (January 1980 to week 2 2004) and CINAHL (January 1982 to week 2 June 2004). Manufacturers were contacted for additional data.

Selection criteria

Trials were selected for the following criteria: design-random allocation of participants; participants—general public with uncompromised manual dexterity; intervention—unsupervised manual and powered toothbrushing for at least 4 weeks. Primary outcomes were the change in plaque and gingivitis over that period.

Data collection and analysis

Six authors independently extracted information. The effect measure for each meta-analysis was the standardised mean difference (SMD) with 95% confidence intervals (CI) using random-effects models. Potential sources of heterogeneity were examined, along with sensitivity analyses for quality and publication bias. For discussion purposes SMD was translated into percentage change.

Main results

Forty-two trials, involving 3855 participants, provided data.

Brushes with a rotation oscillation action removed plaque and reduced gingivitis more effectively than manual brushes in the short term and reduced gingivitis scores in studies over 3 months. For plaque at 1 to 3 months the SMD was -0.43 (95% CI: -0.72 to -0.14), for gingivitis SMD -0.62 (95% CI: -0.90 to -0.34) representing an 11% difference on the Quigley Hein plaque index and a 6% reduction on the Löe and Silness gingival index. At over 3 months the SMD for plaque was -1.29 (95% CI: -2.67 to 0.08) and for gingivitis was -0.51 (-0.76 to -0.25) representing a 17% reduction on the Ainamo Bay bleeding on probing index. There was heterogeneity between the trials for the short-term follow up. Sensitivity analyses revealed the results to be robust when selecting trials of high quality. There was no evidence of any publication bias.

No other powered designs were as consistently superior to manual toothbrushes.

Cost, reliability and side effects were inconsistently reported. Any reported side effects were localised and temporary.

Authors' conclusions

Powered toothbrushes with a rotation oscillation action reduce plaque and gingivitis more than manual toothbrushing.

Observation of methodological guidelines and greater standardisation of design would benefit both future trials and meta-analyses.

Version in French follows.

Brossage manuel versus brossage électrique pour la santé bucco-dentaire

Résumé en langue simplifiée

En comparaison avec les brosses à dent manuelles, les brosses à dent électriques à action de rotation oscillante fournissent une protection contre l'inflammation gingivale dans le long et le court terme ainsi qu'une meilleure suppression de la plaque dans le court terme.

La suppression de la plaque dentaire par le brossage aide à la prévention de l'inflammation gingivale (gingivite). Le brossage dentaire avec un dentifrice fluoré prévient la carie dentaire. Les brosses à dent électriques simulent le brossage manuel de différentes manières (en ligne droite ou d'un mouvement circulaire). Cette revue systématique des essais cliniques a montré que seules les oscillations rotatives (lorsque la tête de la brosse tourne dans un sens puis dans l'autre) sont meilleures que les brosses manuelles dans la suppression de la plaque et de la réduction de l'inflammation gingivale, et pas plus susceptibles de causer des blessures aux gencives. Les effets bénéfiques à long terme pour la santé bucco-dentaire ne sont pas clairs.

Résumé

Contexte

La suppression de la plaque dentaire peut jouer un rôle clef dans le maintien de la santé buccale. Les preuves sont conflictuelles dans l'établissement des mérites relatifs des brosses manuelles et électriques de cette santé.

Objectifs

Comparer les brosses à dent manuelle et électrique dans la suppression de la plaque, la santé gingivale, les tâches et les calculs, la dépendance, les effets secondaires et le coût.

Stratégie de recherche

*Nous avons cherché dans : Cochrane Oral Health Group Trials Register (au 17/06/2004), le Central Register of Controlled Trials (*The Cochrane Library *2004, Issue 2), MEDLINE (Janvier 1966 à la seconde semaine de Juin 2004), EMBASE (Janvier 1980 à la seconde semaine de Juin 2004), CINAHL (Janvier 1982 à la seconde semaine de Juin 2004). Les fabricants ont été contactés pour obtenir des informations additionnelles.*

Critères de sélection

Les essais cliniques ont été sélectionnés selon les critères suivants :

Design : distribution aléatoire des participants,

Participants : tout public avec une dextérité manuelle non compromise,

Intervention : brossage dentaire manuel et électrique non supervisé pendant au moins 4 semaines,

Les objectifs principaux étaient le changement dans la plaque et la gingivite au delà de cette période.

Recueil des données et analyse

6 auteurs ont extrait les informations de manière indépendante. La mesure de l'effet pour chaque méta-analyse était la différence moyenne standardisée (DMS) avec des intervalles de confiance (IC) à 95% en utilisant les modèles à effet aléatoire. Les sources potentielles d'hétérogénéité ont été examinées, ainsi que des analyses de sensibilité effectuées pour la qualité et les biais de publication. Dans un but de discussion, les DMS ont été transformées en pourcentages.

Résultats principaux

42 essais cliniques mettant en jeu 3855 participants ont fourni des données. Les brossages avec une action rotative oscillante ont enlevé la plaque, réduit les gingivites de manière plus efficace que les brosses électriques dans le court terme, et réduit les scores de gingivite dans les études au delà de 3 mois. Pour la plaque de 1 à 3 mois le DMS était de -0,43 (IC 95% -0,72 à -0,14), pour la gingivite le DMS est de -0,62 (95% IC : -0,90 à -0,34), représentant une différence de 11% sur l'indice de plaque de Quigley Hein et une réduction de 6% sur l'indice gingival de Loë et Silness. Au-delà de 3 mois, le DMS pour la plaque était de -1,29 (IC 95% : -2,67 à 0,08) et pour la gingivite -0,51 (-0,76 à -0,25) ce qui représente une réduction de 17% sur l'indice de saignement au sondage d'Ainamo et Bay. Il y avait une hétérogénéité entre les essais cliniques pour des suivis à court terme. Les analyses de sensibilité ont révélé que les résultats étaient robustes lorsque les études étaient de haute qualité. Il n'y avait aucune preuve d'un quelconque biais de publication. Aucun autre type de brosse à dents électrique n'a apporté de résultats supérieurs à la brosse manuelle. Le coût, la validité et les effets secondaires ont été inconstamment reportés. Ces effets secondaires ont été localisés et temporaires.

Conclusions des auteurs

Les brosses à dent électriques avec une action de rotation oscillante réduisent la plaque et la gingivite plus qu'un brossage manuel. Le respect des recommandations statistiques et une meilleure standardisation de la conception serait bénéfique à de futurs essais cliniques et méta-analyses.

Slow-release fluoride devices for the control of dental decay

Brian C Bonner[1], Jan E Clarkson[1], Lorna Dobbyn[2], Smriti Khanna[3]
[1]Dental Health Services Research Unit, University of Dundee, Dundee, UK. [2]Dundee Dental School and Hospital, University of Dundee, Dundee, UK. [3]Sheffield, UK

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD005101.pub2. This version first published online: 18 October 2006 in Issue 4, 2006. Last assessed as up-to-date: 8 August 2006.

Plain language summary

Slowly dissolving fluoride-releasing glass beads may help reduce dental decay if retained in the mouth over time, but retention of the beads is a problem.

This review concludes that slow-release fluoride devices have the potential to protect against tooth decay if they can be kept in place, in the mouth, for 2 years. The evidence, so far, is considered to be weak and unreliable. In a single study a reduction of 0.72 in mean caries increment (assessed as decayed, filled, or missing teeth) compared to control was reported (caries increment in the intervention group was 0.19 versus 0.91 in the control group). However, this analysis excluded 52% of available participants, whose beads had become dislodged.

Abstract

Background

Slow-release fluoride devices have been investigated as a potentially cost-effective method of reducing dental caries in those with high risk of disease.

Objectives

To evaluate the effectiveness of different types of slow-release fluoride devices on preventing, arresting, or reversing the progression of carious lesions on all surface types of deciduous and permanent teeth.

Search strategy

We searched (up until February 2005) multiple electronic databases (Cochrane Oral Health Group's Trials Register, CENTRAL, MEDLINE, EMBASE), bibliographic references of identified randomised controlled trials (RCTs), textbooks, review articles, and meta-analyses. Letters were sent to authors of identified RCTs asking for clarifications and unpublished or ongoing research. Relevant journals were handsearched for more recent reports than those obtained from databases.

Selection criteria

Randomised or quasi-randomised controlled trials (RCTs) comparing slow-release fluoride devices with an alternative fluoride treatment, placebo, or no intervention in all age groups. The main outcomes measures sought were changes in numbers of decayed, missing, and filled teeth or surfaces (DMFT/DMFS in permanent teeth or dmft/dmfs in primary teeth) and progression of carious lesions through enamel and into dentine.

Data collection and analysis

Abstracts of all reports identified were considered independently by two review authors and full reports obtained of any potentially relevant articles to allow further assessment for relevance and validity. Data extraction and quality assessment were conducted independently by two and three review authors respectively, with arbitration by the fourth. Where uncertainty existed, authors were contacted for additional information.

Main results

Only one trial involving 174 children fully met the criteria for inclusion in this review. Although 132 children were still included in the trial at the 2-year completion point, examination and statistical analysis was performed on only the 63 children who had retained the beads. Thirty-one of these were in the intervention group and 32 in the control group.

Amongst these 63 children, caries increment was reported to be statistically significantly lower in the intervention group than in the placebo group (mean difference: -0.72 DMFT, 95% confidence interval -1.23 to -0.21 and -1.52 DMFS, 95% confidence interval - 2.68 to -0.36).

Authors' conclusions

There is some evidence of a caries-inhibiting effect of slow-release fluoride glass beads. This evidence is regarded as weak and unreliable because the results were from participants selected on the basis of bead retention rather than an intention-to-treat analysis.

Version in French follows.

Dispositifs de relargage lent de fluor pour le contrôle des caries dentaires

Résumé en langue simplifiée

Des grains de verre à dissolution lente pour le relargage de fluor pourraient aider à réduire la carie dentaire s'ils sont maintenus en bouche suffisamment de temps mais la conservation des grains est un problème. Cette revue systématique conclut que les dispositifs à relargage lent de fluor ont le potentiel de protéger de la carie dentaire s'ils peuvent être gardés en place dans la bouche pendant 2 ans. La preuve est considérée comme faible et non fiable : dans une seule étude une réduction de 0,72 de la moyenne de l'indice carieux (évalué par le nombre de dents cariées, obturées ou manquantes) a été rapportée (l'indice CAO dans le groupe traitement est de 0,19 par rapport au groupe contrôle dans lequel il est de 0,91). Cependant cette analyse exclut 52% des participants disponibles car les grains ont été délogés.

Résumé

Contexte

Des dispositifs de relargage lent de fluor ont été rapportés comme étant une méthode potentiellement bonne d'un point de vue rapport coût/efficacité pour réduire la carie dentaire chez les personnes à haut risque carieux.

Objectifs

Evaluer l'efficacité des différents dispositifs de relargage lent de fluor sur la prévention, l'arrêt ou l'inversion de la progression des lésions carieuses sur toutes les surfaces dentaires à type de dents déciduales ou permanentes.

Stratégie de recherche

Nous avons cherché jusqu'en février 2005 dans de nombreuses bases de données électroniques (Cochrane Oral Health Group's Trials Register, CENTRAL, MEDLINE, EMBASE), dans les bibliographies des essais cliniques randomisés, dans les articles de revues, manuels scolaires et méta-analyses. Des lettres ont été envoyées aux auteurs des essais identifiés pour leur demander des éclaircissements ainsi que des recherches non publiées ou en cours. Une recherche manuelle sur les journaux pertinents a été menée pour obtenir des compte-rendus plus récents que ceux disponibles dans les bases de données.

Critères de sélection

Essais cliniques randomisés ou semi randomisés comparant les dispositifs de relargage lent de fluor avec un traitement fluoré alternatif, un placebo ou aucune intervention, quel que soit l'âge dans les groupes. Les mesures des objectifs principaux recherchés sont changées en nombre de dents ou faces cariées, manquantes ou obturées. (CAO/CAOF pour les dents permanentes et cao/caof dans la dentition primaire). On considère également la progression des lésions carieuses à travers l'émail et la dentine.

Recueil des données et analyse

Les résumés de tous les rapports identifiés ont été considérés de manière indépendante par 2 auteurs de revue et les rapports complets obtenus pour tous les articles pertinents pour permettre d'obtenir plus de renseignements quant à la pertinence et la validité de ceux-ci. L'extraction des données et l'évaluation qualitative ont été conduites de manière indépendante par respectivement 2 ou 3 auteurs de revue, avec un arbitrage par un quatrième. Quand une incertitude persistait, les auteurs ont été contactés pour obtenir des informations additionnelles.

Résultats principaux

Seulement une étude mettant en jeu 174 enfants au maximum correspondait aux critères d'inclusion de cette revue. Bien que 132 enfants étaient encore inclus à l'achèvement de l'étude au bout de 2 ans, l'examen et l'analyse statistique a été réalisée sur seulement 63 enfants chez qui les grains étaient encore en place. 31 d'entre eux étaient dans le groupe d'intervention et 32 dans le groupe témoin. Parmi ces 63 enfants, l'indice carieux était statistiquement et significativement inférieur dans le groupe intervention par rapport au groupe placebo. (Différence moyenne : CAO -0,72 avec IC 95% -1,23 à -0,21 et CAOF -1,52 avec IC 95% -2,68 à -0,36).

Conclusions des auteurs

Il y a une preuve d'un effet inhibiteur des grains de verre à relargage lent de fluor sur les caries. Cette preuve est cependant faible et non fiable car les résultats obtenus provenaient de patients sélectionnés sur la base de la rétentivité des grains plutôt que sur la base d'une analyse en intention de traiter.

Fluorides for the prevention of white spots on teeth during fixed brace treatment

Philip E Benson[1], Nicola Parkin[1], Declan T Millett[2], Fiona Dyer[3], Suzy Vine[4], Anwar Shah[5]
[1]Department of Oral Health and Development, School of Clinical Dentistry, University of Sheffield, Sheffield, UK. [2]Department of Oral Health and Development, University Dental School and Hospital, Wilton, Cork, Ireland. [3]Department of Orthodontics, Charles Clifford Dental Hospital, Sheffield, UK. [4]Manchester, UK. [5]Cochrane Oral Health Group, School of Dentistry, The University of Manchester, Manchester, UK

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD003809.pub2. This version first published online: 19 July 2004 in Issue 3, 2004. Last assessed as up-to-date: 20 May 2004.

Plain language summary

There is some evidence that a daily fluoride mouthrinse or a fluoride-containing cement will reduce tooth decay if used during treatment with fixed braces.

Tooth decay, in the form of unsightly white spots, can occur on teeth being straightened with fixed braces if they are not cleaned properly. The review found that a daily sodium fluoride mouthrinse reduces the depth of decay that develops on a tooth during treatment with fixed braces. Also, one fluoride-containing cement reduced the number of white spots and the amount of tooth material lost to decay. More high quality research is needed to be sure which is the best way to get the fluoride to the tooth surface in patients during treatment with braces and whether there are any adverse effects. Based on current best practice in other areas of dentistry for which there is evidence, we recommend that patients with fixed braces rinse daily with a 0.05% sodium fluoride mouthrinse.

Abstract

Background

White spots can appear on teeth during fixed brace treatment because of early decay around the brace attachments. Fluoride is effective at reducing decay in susceptible individuals and is routinely prescribed in various different forms to patients during orthodontic treatment.

Objectives

To evaluate the effectiveness of fluoride in preventing white spots during orthodontic treatment and to compare the different modes of delivery of fluoride.

Search strategy

We searched the Cochrane Oral Health Group's Trials Register (January 2004); CENTRAL (*The Cochrane Library* 2002, Issue 3); MEDLINE (January 1966 to July 2003); EMBASE (January 1980 to July 2003). Authors of trials were contacted for further data.

Selection criteria

Trials were selected if they met the following criteria: a randomised or quasi-randomised clinical trial, involving the use of a fluoride-containing product compared with no use or use of a non-fluoride control and enamel demineralisation was assessed during or after orthodontic treatment.

Data collection and analysis

Six reviewers independently, in duplicate, extracted data. The primary outcome was the difference in the presence or absence of white spots between experimental and control patients for parallel design studies, and between experimental and control quadrants, for split-mouth design studies. Potential sources of heterogeneity were examined. Sensitivity analyses were undertaken for the items assessed for quality and publication bias.

Main results

The primary outcome of the review was the presence or absence of white spots by patient at the end of treatment. Secondary outcomes included any quantitative assessment of enamel mineral loss or lesion depth. Other outcomes such as differences in size and severity of white spots, any patient based outcomes, such as perception of white spots could not be included because there were insufficient data.

Fifteen trials, with 723 participants, provided data for this review. None of the studies fulfilled all of the methodological quality assessment criteria.

There is some evidence that a daily sodium fluoride mouthrinse reduces the severity of enamel decay surrounding a fixed brace (weighted mean difference for lesion depth -70.0; 95% CI -118.2 to -21.8) and that use of a glass ionomer cement for bracket bonding reduces the prevalence (Peto OR 0.35; 95% CI 0.15 to 0.84) and severity of white spots (weighted mean difference for mineral loss -645 vol%.µm; 95% CI -915 to -375) compared with composite resins.

Authors' conclusions

There is some evidence that the use of topical fluoride or fluoride-containing bonding materials during orthodontic treatment reduces the occurrence and severity of white spot lesions, however there is little evidence as to which method or combination of methods to deliver the fluoride is the most effective. Based on current best practice in other areas of dentistry, for which there is evidence, we recommend that patients with fixed braces rinse daily with a 0.05% sodium fluoride mouthrinse. More high quality, clinical research is required into the different modes of delivering fluoride to the orthodontic patient.

Version in French follows.

Utilisation de fluor pour la prévention de tâches blanches sur les dents pendant le traitement orthodontique multibagues

Résumé en langue simplifiée

Les bains de bouche fluorés utilisés quotidiennement pendant le traitement orthodontique ainsi que les ciments contenant du fluor utilisés pour coller les brackets semblent réduire le risque de carie. La carie dentaire, sous forme de tâche blanche disgracieuse, peut apparaître sur des dents supports de bagues ou de brackets, si elles ne sont pas correctement nettoyées. Cette revue systématique montre que l'utilisation quotidienne de bain de bouche contenant du fluorure de sodium réduit la profondeur des caries qui se développent au cours d'un traitement orthodontique par appareillage fixe. De plus, un ciment contenant du fluor réduit le nombre de tâches blanches et la quantité de dent détruite par la carie. Une recherche de meilleure qualité est nécessaire pour déterminer le meilleur moyen d'amener le fluor jusqu'à la surface dentaire pendant les traitements multibagues, et s'il existe des effets indésirables. En s'appuyant sur les bonnes pratiques actuelles dans d'autres domaines dentaires pour lesquels il existe des preuves, nous recommandons aux patients traités par multibagues d'utiliser quotidiennement un bain de bouche à 0.05% de fluorure de sodium.

Résumé

Contexte

Des tâches blanches peuvent apparaître sur les dents au cours d'une traitement multi-attache à cause d'une carie autour du bracket. Le fluor est efficace pour réduire le risque de caries chez les individus à risque, il est prescrit régulièrement sous différentes formes aux patients au cours de leur traitement orthodontique.

Objectifs

Evaluer l'efficacité du fluor dans la prévention des tâches blanches au cours d'un traitement orthodontique et comparer les différents modes d'utilisation du fluor.

Stratégie de recherche

*La recherche a porté sur les bases de données The Cochrane Oral Health Group's Trials Register (jusqu'en janvier 2004); CENTRAL (*The Cochrane Library *2002, Issue 3); MEDLINE (de janvier 1966 à juillet 2003); EMBASE (de janvier 1980 à juillet 2003). Les auteurs des essais cliniques ont été contactés pour obtenir des données supplémentaires.*

Critères de sélection

Essais cliniques randomisés ou quasi-randomisés, incluant l'utilisation d'un produit contenant des fluorures comparée à l'absence d'utilisation ou à l'utilisation d'un produit témoin sans fluorures, et dans lesquels la déminéralisation de l'émail est mesurée pendant ou après le traitement orthodontique.

Recueil des données et analyse

Six investigateurs ont extrait les données, en double et de façon indépendante. Le critère de jugement principal était la différence dans la présence ou dans l'absence de tâches blanches entre les patients du groupe expérimental et les patients du groupe témoin pour les études conduites en parallèles et entre les quadrants expérimentaux et les quadrants contrôles pour les études en bouche divisée. Les sources d'hétérogénéité potentielle ont été examinées. Des analyses de sensibilité ont été réalisées pour les items mesurant la qualité et les biais de publication.

Résultats principaux

Le critère de jugement principal de la revue systématique était la présence ou l'absence de tâches blanches chez un patient en fin de traitement orthodontique. Les critères de jugement secondaires comprenaient les mesures quantitatives de la perte minérale amélaire ou la profondeur de la lésion. Les autres critères de jugement tels que les différences en taille et en sévérité des tâches blanches, les critères subjectifs comme la perception des tâches par le patient n'ont pas été pris en compte car les données étaient insuffisantes. Au total, 15 essais avec 723 participants ont fourni les données pour cette revue systématique. Aucune étude ne remplissait les critères de qualité méthodologique. Il semble que les bains de bouche contenant du fluorure de sodium réduise la sévérité de la carie de l'émail autour d'un bracket (différence moyenne pondérée de profondeur de lésion -70.0 ; IC95% [-118.2 ;-21.8]) et que l'emploi d'un ciment verre-ionomère pour coller le bracket réduise la prévalence (OR de Peto 0.35 ; IC95% [0.15 ;0.84]) et la sévérité des tâches blanches (différence moyenne pondérée de perte minérale -645 vol% µm ; IC95% [-915 ;-375]) comparée à l'utilisation de résines composites.

Conclusions des auteurs

Il semble que l'utilisation topique de fluor, ou l'utilisation de matériaux de collage contenant du fluor, pendant le traitement orthodontique réduise l'occurrence et la sévérité des lésions en tâches blanches. Cependant, il n'y a pas suffisamment d'éléments pour déclarer qu'une méthode ou une combinaison de méthodes d'administration du fluor est la plus efficace. En s'appuyant sur les bonnes pratiques actuelles dans les autres domaines dentaires pour lesquels des preuves existent, nous recommandons aux patients avec des bagues et brackets d'utiliser quotidiennement un bain de bouche avec du fluorure de sodium à 0.05%. Des études cliniques de meilleure qualité sont nécessaires pour étudier les différents modes d'administration du fluor chez les patients en orthodontie.

Interventions for replacing missing teeth: different times for loading dental implants

Marco Esposito[1], Maria Gabriella Grusovin[1], Hubert Achille[1], Paul Coulthard[1], Helen V Worthington[2]
[1]Department of Oral and Maxillofacial Surgery, School of Dentistry, The University of Manchester, Manchester, UK. [2]Cochrane Oral Health Group, MANDEC, School of Dentistry, The University of Manchester, Manchester, UK

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD003878.pub4. This version first published online: 21 January 2009 in Issue 1, 2009. Last assessed as up-to-date: 30 October 2008.

Plain language summary

Some people may be able to have artificial teeth attached to dental implants immediately instead of having to wait for months, but more research is needed to be sure.

When people have dental implants in their jaws, they wait several months for the bone around the implants to heal before artificial teeth are attached (using removable dentures in the meantime). If artificial teeth could be loaded onto the implant immediately, people might be able to start chewing comfortably the same day or within weeks. The review found some evidence from studies that immediate or early loading of artificial teeth may have a slightly poorer outcome than conventional (after waiting for several months) loading. However, it is possible to successfully load dental implants immediately or early after their placement in selected people, although not all clinicians may obtain such good results.

Abstract

Background

To minimize the risk of implant failure, osseointegrated dental implants are conventionally kept load-free during the healing period. During healing removable prostheses are used, however many patients find these temporary prostheses rather uncomfortable and it would be beneficial if the healing period could be shortened without jeopardizing implant success. Nowadays immediately and early loaded implants are commonly used in mandibles (lower jaws) of good bone quality. It would be useful to know whether there is a difference in success rates between immediately or early loaded implants compared with conventionally loaded implants.

Objectives

To evaluate the efficacy of

1. immediate (within 1 week), early (between 1 week and 2 months), and conventional (after 2 months) loading of osseointegrated implants, and of
2. immediate occlusal versus non-occlusal loading during the bone healing phase.

Search strategy

The Cochrane Oral Health Group's Trials Register, CENTRAL, MEDLINE and EMBASE were searched. Handsearching included several dental journals. Authors of all identified trials, an Internet discussion group and 55 dental implant manufacturers were contacted to find unpublished randomised controlled trials (RCTs). The last electronic search was conducted on 4 June 2008.

Selection criteria

All RCTs of root-form osseointegrated dental implants, having a follow up of 4 months to 1 year, comparing the same implant type immediately, early and conventionally loaded or occlusally and non-occlusally loaded. Outcome measures were: prosthesis and implant failures and radiographic marginal bone level changes.

Data collection and analysis

Data were independently extracted, in duplicate, by two review authors. Authors were contacted for details of randomisation and withdrawals and a quality assessment was carried out. The Cochrane Collaboration's statistical guidelines were followed.

Main results

Thirty RCTs were identified and 22 trials including 976 participants in total were included. Twelve trials compared immediate versus conventional loading, three early versus conventional loading, six immediate versus early loading, and one occlusally versus nonocclusally loaded implants. On a patient, rather than per implant basis, there were no statistically significant differences for any of the meta-analyses.

Authors' conclusions

It is possible to successfully load dental implants immediately or early after their placement in selected patients, though not all clinicians may achieve optimal results. It is unclear whether it is beneficial to avoid occlusal contacts during the osseointegration phase. Trends suggest that immediately loaded implants fail more often than those conventionally loaded, but less commonly than those loaded early. If a clinician wishes to load the implants early, it might be wiser to load them immediately (within 1 week) rather than waiting for 1 or 2 months. A high degree of primary implant stability (high value of insertion torque) seems to be one of the prerequisites for a successful immediate/early loading procedure. More well designed RCTs are needed and should be reported according to the CONSORT guidelines (http://www.consort-statement.org/).

Version in French follows.

Interventions pour le remplacement de dents manquantes : différents temps pour la mise en charge des implants dentaires

Résumé en langue simplifiée

Certaines personnes peuvent être capables de recevoir immédiatement des dents artificielles fixées aux implants dentaires plutôt que d'attendre plusieurs mois, mais il est nécessaire d'effectuer de plus amples recherches pour en être sûr.

Lorsque les personnes ont des implants dentaires en bouche, ils attendent plusieurs mois la cicatrisation de l'os autour de l'implant avant que les dents artificielles ne s'y fixent (ils reçoivent en attendant des appareils amovibles). Si les dents artificielles pouvaient être solidarisées à l'implant immédiatement, les personnes seraient capables de mastiquer confortablement le jour même ou au bout de quelques semaines. Cette revue systématique a trouvé quelques éléments de preuve issus d'études montrant que la mise en charge immédiate ou précoce de la dent artificielle sur l'implant pourrait fournir des résultats similaires à ceux obtenus après une attente de plusieurs mois. Toutefois, il y a aussi quelques éléments indiquant que tous les cliniciens n'obtiennent pas d'aussi bons résultats. Il est donc nécessaire d'effectuer des recherches supplémentaires pour être sûr que la mise en charge immédiate ou précoce des implants est efficace, au maxillaire comme à la mandibule, et sur quels patients.

Résumé

Contexte

Afin de diminuer le risque d'échec implantaire, les implants dentaires ostéointégrés sont traditionnellement laissés non chargés pendant la période de cicatrisation. Durant cette période, des prothèses amovibles sont utilisées, mais de nombreux patients trouvent ces prothèses transitoires plutôt inconfortables, et il serait bénéfique de réduire la période de cicatrisation sans compromettre les succès implantaire. De nos jours, des implants mis en charge immédiatement ou précocement sont couramment posés sur des mandibules à l'os de bonne qualité. Il serait utile de savoir s'il y a une différence dans les taux de succès entre les implants mis en charge immédiatement ou précocement, comparativement à une mise en charge conventionnelle.

Objectifs

Tester l'hypothèse nulle d'une absence de différence dans la performance clinique des implants ostéointégrés, mis en charge à différents temps, avec un suivi entre 6 mois et un an après la mise en charge.

Stratégie de recherche

La recherche a porté sur les bases de données The Cochrane Oral Health Group's Trials Register, The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE et EMBASE. Plusieurs périodiques dentaires ont été manuellement recherchés. Les auteurs des essais cliniques identifiés, un groupe de discussion internet et 55 compagnies de fabrication d'implants ont aussi été contactés pour trouver des essais cliniques randomisés non publiés. La dernière recherche électronique date du 7 Août 2006.

Critères de sélection

Tous les essais cliniques randomisés portant sur des implants traditionnels oraux ostéo-intégrés avec un suivi de 6 mois à un an, comparant les mêmes implants traditionnels oraux ostéo-intégrés mis en charge immédiatement (moins d'une semaine), précocement (entre une semaine et deux mois), ou traditionnellement (après deux mois). Les critères de jugement sont : échec prothétique, échec implantaire, niveaux de l'os marginal sur des radiographies intra-orales.

Recueil des données et analyse

Les données ont été extraites de façon indépendante, en double, par deux auteurs de la revue. Les auteurs des études originales ont été contactés pour donner des détails concernant la randomisation et les perdus de vue, et une analyse qualitative a été effectuée. Les recommandations statistiques du Cochrane Oral Health Group ont été suivies.

Résultats principaux

Vingt essais cliniques randomisés ont été identifiés et onze essais cliniques portant sur un total de 300 patients ont été inclus. Six essais cliniques ont comparé la mise en charge immédiate versus la mise en charge conventionnelle, trois essais ont comparé la mise en charge précoce versus la mise en charge conventionnelle, et deux essais cliniques ont comparé la mise en charge immédiate à la mise en charge précoce. A l'échelle du patient (plutôt qu'à celle de l'implant), il n'y avait pas de différences statistiquement significative pour toutes les méta-analyses.

Conclusions des auteurs

*Il est possible d'effectuer la mise en charge immédiate ou précoce des implants, avec succès et sur des patients sélectionnés, bien que tous les cliniciens n'obtiennent pas les mêmes résultats lors de la mise en charge immédiate. Un haut degré de stabilité primaire de l'implant (importante valeur du torque à l'insertion) semble être l'un des pré-requis à la mise en charge immédiate/précoce. Des essais cliniques randomisés supplémentaires sont nécessaires. La priorité devrait être donnée aux essais cliniques comparant la mise en charge immédiate à la mise en charge précoce des implants pour améliorer la satisfaction des patients et diminuer le temps de traitement. Ces essais devraient être reportés conformément aux recommandations CONSORT (*http://www.consort-statement.org/*).*

Interventions for treating oral leukoplakia

Giovanni Lodi[1], Andrea Sardella[1], Cristina Bez[1], Federica Demarosi[1], Antonio Carrassi[1]
[1]Oral Pathology and Oral Medicine, University of Milan, Milan, Italy

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD001829.pub3. This version first published online: 18 October 2006 in Issue 4, 2006. Last assessed as up-to-date: 3 July 2006.

Plain language summary

No evidence from trials to show how to prevent leukoplakia in the mouth becoming malignant.

Oral leukoplakia is a thickened white patch formed in the mouth lining that cannot be rubbed off. Leukoplakia is a lesion that sometimes becomes cancerous (a tumour that invades and destroys tissue, then spreads to other areas). Preventing this change is critical as survival rates of more than 5 years after diagnosis with oral cancer is low. Drugs, surgery and other therapies have been tried. The review of trials compared several drugs such as bleomycin, vitamin A and beta carotene supplements and mixed tea. There was no evidence found to show the effects of these treatments. More research is needed.

Abstract

Background

Oral leukoplakia is a relatively common oral lesion that in a small but significant proportion of cases changes into cancer. Since most leukoplakias are asymptomatic, the primary objective of treatment should be to prevent such malignant transformation.

Objectives

To assess effectiveness, safety and acceptability of treatments for leukoplakia.

Search strategy

The following databases were searched for relevant trials: Cochrane Oral Health Group's Trials Register (to April 2006), CENTRAL (*The Cochrane Library* 2006, Issue 1), MEDLINE (from 1966 to December 2005), and EMBASE (from 1980 to December 2005). Handsearching was performed for the main oral medicine journals. References of included studies and reviews were checked. Oral medicine experts were contacted through an European mailing list (EURORALMED).

Selection criteria

Randomised controlled trials (RCTs), enrolling patients with a diagnosis of oral leukoplakia, were included. Any surgical or medical (topical and systemic) treatment was included. The primary outcome considered was malignant transformation of leukoplakia. Other outcomes considered were clinical resolution, histological modification and frequency of adverse effects.

Data collection and analysis

Data were collected using a specific extraction form. Malignant transformation of leukoplakia, demonstrated by histopathological examination, was the main outcome considered. Secondary outcomes included clinical resolution of the lesion and variation in dysplasia severity. The validity of included studies was assessed by two review authors, on the basis of the method of allocation concealment, blindness of the study and loss of participants. Data were analysed by calculating risk ratio. When valid and relevant data were collected, a meta-analysis of the data was undertaken.

Main results

The possible effectiveness of surgical interventions, including laser therapy and cryotherapy, has never been studied by means of a RCT with a no treatment/placebo arm. Twenty-five eligible RCTs of non-surgical interventions were identified: 11 were excluded for different reasons, five were ongoing studies, leaving nine studies to be included in the review (501 patients). Two studies resulted at low risk of bias, six at moderate risk of bias and one at high risk of bias. Vitamin A and retinoids were tested by five RCTs, two studies investigated beta carotene or carotenoids, the other drugs tested were bleomycin (one study), mixed tea (one study) and ketorolac (one study). One study tested two treatments. Malignant transformation was recorded in just two studies: none of the treatments tested showed a benefit when compared with the placebo. Treatment with beta carotene, lycopene and vitamin A or retinoids, was associated with significant rates of clinical resolution, compared with placebo or absence of treatment. Whenever reported, a high rate of relapse was a common finding. Side effects of variable severity were often described; however, interventions were well accepted by patients, since drop-out rates were similar between treatment and control groups.

Authors' conclusions

To date there is no evidence of effective treatment in preventing malignant transformation of leukoplakia. Treatments may be effective in the resolution of lesion, however relapses and adverse effects are common.

Version in French follows.

Interventions pour le traitement de la leucoplasie buccale

Résumé en langue simplifiée

Aucune preuve provenant d'essais cliniques pour montrer comment prévenir la leucoplasie buccale devenant maligne. La leucoplasie orale se traduit par des taches blanches épaisses formées dans la paroi de la bouche, ne pouvant pas être enlevées par frottement. La leucoplasie est une lésion qui devient parfois cancéreuse (une tumeur qui envahit et détruit les tissus, puis s'étend vers d'autres tissus). La prévention de ce changement est critique puisque les taux de survie à plus de 5 ans après diagnostic, avec un cancer oral sont bas. Des médicaments, chirurgie et autres thérapies ont été essayés. Cette revue systématique a comparé différents médicaments telle que le bleomycine, des suppléments en vitamine A et bêta-carotène et ainsi que certains mélanges de thé. Il n'y a aucune preuve pour montrer les effets de ces traitements. Plus de recherches sont nécessaires.

Résumé

Contexte

La leucoplasie orale est une lésion buccale relativement commune qui dans une petite mais significative proportion de cas peut se transformer en un cancer puisque la plupart des leucoplasies sont asymptomatiques. L'objectif principal de traitement devrait être de prévenir un telle transformation maligne.

Objectifs

Evaluer l'efficacité, la sûreté et l'acceptabilité des traitements pour la leucoplasie.

Stratégie de recherche

*Les bases de données suivantes ont été interrogées pour des articles pertinents: Cochrane Oral Health Group's Trials Register (jusqu'en Avril 2006), CENTRAL (*The Cochrane Library *2006, Issue 1), MEDLINE (de 1966 à Décembre 2005), EMBASE (de 1980 à Décembre 2005). Une recherche manuelle a été entreprise pour les journaux principaux de médecine buccale. Les références des études incluses ainsi que les revues ont été analysées. Les experts en médecine buccale ont été contactés à travers une liste de mailing européen (EURORALMED).*

Critères de sélection

Les essais cliniques randomisés recrutant des patients avec un diagnostic de leucoplasie orale ont été inclus. N'importe quel traitement chirurgical ou médical a été inclus. Le critère de jugement principal considéré est la transformation maligne de la leucoplasie. Les autres critères pris en compte sont la résolution clinique, les modifications histologiques et la fréquence des effets secondaires.

Recueil des données et analyse

Les données ont été collectées en utilisant une feuille spécifique d'extraction. La transformation maligne, démontrée par un examen histopathologique, a été le critère de jugement principal considéré. Les variables secondaires sont la résolution clinique et les changements de la sévérité de la dysplasie. La validité des études incluses a été évaluée par 2 reviewers sur la base d'une méthode d'attribution dans les groupes, de l'aveugle de l'étude et de la perte des sujets. Les données ont été analysées par calcul d'un RR. Lorsque des données valides et pertinentes ont été collectées, une méta-analyse des données a été entreprise.

Résultats principaux

La possible efficacité des interventions chirurgicales comme la thérapie par laser et la cryothérapie, n'a jamais été étudiée via essais cliniques randomisés traitement/placebo. 25 essais cliniques randomisés éligibles avec interventions non chirurgicales ont été identifiés. 11 ont été exclus pour différentes raisons, 5 étaient des études en cours de réalisation, restent 9 études à inclure dans la revue systématique (501 patients). Deux études ont été considérées à bas risque de biais, 6 à risque modéré de biais et une à haut risque. Vitamine A et rétinoïdes ont été testés par 5 essais cliniques randomisés, 2 études pour les béta-carotènes et les caroténoïdes, les autres médicaments testés étaient la bleomycine (1 étude), le mélange de thé (1 étude) et le ketorolac (1 étude). 1 étude a testé 2 traitements. La transformation maligne n'a été enregistrée que dans juste deux études : aucun des traitements testés n'a montré un bénéfice en comparaison avec un placebo. Le traitement à base de béta-carotène, lycopène et vitamine A ou rétinoïdes a été associé à des taux significatifs de résolution clinique, lorsque on le compare à aucun traitement ou à un placebo. Chaque fois qu'il a été rapporté, un taux élevé de rechute a été souvent observé. Les effets secondaires, de sévérité variable, ont été souvent décrits, cependant les traitements ont été souvent bien acceptés par les patients, puisque les taux de perdus de vue étaient similaires entre les groupes traitement et témoin.

Conclusions des auteurs

A cette date il n'y a aucune preuve de l'efficacité du traitement de la leucoplasie dans la prévention de sa transformation maligne. Les traitements devraient être efficaces dans la résolution de la lésion, cependant les rechutes et les effets secondaires sont fréquents.

Interventions for the prevention and treatment of herpes simplex virus in patients being treated for cancer

Anne-Marie Glenny[1], Luisa M Fernandez Mauleffinch[1], Sue Pavitt[2], Tanya Walsh[3]
[1]Cochrane Oral Health Group, MANDEC, School of Dentistry, The University of Manchester, Manchester, UK. [2]Clinical Trials Research Unit, University of Leeds, Leeds, UK. [3]School of Dentistry, The University of Manchester, Manchester, UK

Cochrane Database of Systematic Reviews, Issue 2, 2009 (Status in this issue: *Unchanged*) Copyright © 2009 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. DOI: 10.1002/14651858.CD006706.pub2. This version first published online: 21 January 2009 in Issue 1, 2009. Last assessed as up-to-date: 9 November 2008.

Plain language summary

Treatment of cancer is increasingly effective, but associated with oral complications such as mucositis, fungal infections, bacterial infections and viral infections such as the herpes simplex virus (HSV). Oral complications can impact severely on quality of life and may lead to life-threatening systemic infection. Infection with HSV can cause pain and blistering on or around the lips and within the mouth. Orofacial lesions are most commonly caused by HSV type 1. Aciclovir and other antiviral drugs such as valaciclovir, famiciclovir and penciclovir, have been widely used to treat HSV-related conditions. Recurrent HSV type 1 infection in patients who are immunocompromised due to treatment for cancer may be more aggressive, painful and slower to heal. These more extensive lesions often require much longer treatment and leave the patient more susceptible to developing drug-resistant strains of HSV. This review of 17 trials found evidence that aciclovir is efficacious in the prevention and treatment of HSV infections, in terms of preventing clinical/culture positive HSV infections, reduction in healing time, duration of viral shedding and relief of pain. There is no evidence that valaciclovir is more efficacious than aciclovir, or that a high dose of valaciclovir is better than a low dose of valaciclovir. There is evidence that for prevention, placebo is more efficacious than prostaglandin E. However, in all included trials, risk of bias is unclear.

Abstract

Background

Treatment of cancer is increasingly effective, but associated with oral complications such as mucositis, fungal infections, bacterial infections and viral infections such as the herpes simplex virus (HSV).

Objectives

To examine the effects of interventions for the prevention or treatment or both, of herpes simplex virus in patients receiving treatment for cancer.

Search strategy

We searched the following databases: Cochrane Oral Health Group's Trials Register, CENTRAL, MEDLINE, EMBASE, CINAHL, CANCERLIT, SIGLE and LILACS. The reference list of all related review articles and articles considered to be potentially relevant were checked for further trials. Authors of identified trials and known specialists in the field were also contacted in an attempt to identify any additional published or unpublished trials. Date of most recent search: November 2008.

Selection criteria

All randomised controlled trials comparing interventions for the prevention or treatment or both of HSV infection in people being treated for cancer. Outcomes were presence/absence of clinical/culture positive HSV infections (prevention), time to complete healing of lesions (treatment), duration of viral shedding, recurrence of lesions, relief of pain, amount of analgesia, duration of hospital stay, cost of oral care, patient quality of life and adverse effects.

Data collection and analysis

Data were independently extracted, in duplicate, by two review authors. Authors were contacted for details of randomisation, blindness and sample demographics where necessary. Quality assessment was carried out on randomisation, blindness, withdrawals and selective reporting. The Cochrane Collaboration's statistical guidelines were followed and risk ratio (RR) values were calculated using random-effects models.

Main results

Seventeen trials satisfied the inclusion criteria. Four trials evaluated preventative interventions for HSV lesions, three trials for viral isolates, and eight trials evaluated both outcome measures. A single trial reported on the cost of prophylaxis for HSV. Two trials evaluating treatment reported on time to healing, duration of viral shedding and relief of pain. No trials reported on duration of hospital stay, amount of analgesia or patient quality of life.

In placebo controlled trials, aciclovir was found to be effective for the prevention of HSV infections as measured by oral lesions or viral isolates (RR = 0.16, 95% confidence interval (CI) 0.08 to 0.31 nine trials; RR = 0.17, 95% CI 0.07 to 0.37 nine trials). There is no evidence that valaciclovir is more efficacious than aciclovir, or that higher doses of valaciclovir are more effective than lower doses. Placebo was found to be more effective than prostaglandin E for prevention of viral isolates (RR = 1.87, 95% CI 1.12 to 3.14 one trial).

Aciclovir was also found to be effective for the treatment of HSV in terms of duration of viral shedding (median of 2.5 days versus 17.0 days, P = 0.0002; 2 days compared to more than 9, P = 0.0008), time to first decrease in pain

(median 3 days compared to 16, P = 0.04), complete resolution of pain (9.9 days compared to 13.6 days, P = 0.01; median of 6 days compared to 16, P = 0.05), 50% healing (median of 6 days compared to 11, P = 0.01) and total healing (median 13.9 days compared to 20.7 days, P = 0.08; median of 8 days compared to 21, P = 0.0).

Authors' conclusions

There is evidence that aciclovir is efficacious in the prevention and treatment of herpes simplex virus infections. There is no evidence that valaciclovir is more efficacious than aciclovir, or that a high dose of valaciclovir is better than a low dose of valaciclovir. There is evidence that as a prophylaxis, placebo is more efficacious than prostaglandin E. However, in all included trials, risk of bias is unclear.

Version in French follows.

Méthodes de prévention et de traitement de l'infection par Herpes simplex chez les patients traités pour un cancer

Résumé simplifié

Le traitement du cancer devient de plus en plus efficace, mais est associé à des complications buccales telle que des mucites, des infections fongiques, des infections bactériennes et des infections virales comme l'Herpes Simplex Virus (HSV). Les complications buccales peuvent se répercuter sévèrement sur la qualité de vie et peuvent conduire à des infections systémiques mettant en jeu le pronostic vital. L'infection au HSV peut causer des douleurs et se manifester sur ou autour des lèvres ainsi que dans la bouche. Les lésions orofaciales sont le plus souvent causées par l'HSV de type 1. L'aciclovir et les autres produits antiviraux comme le valaciclovir, famiciclovir et penciclovir, ont été largement utilisés pour traiter l'HSV. La récurrence de l'HSV type 1 chez des patients qui sont immunodéficients à cause d'un traitement pour le cancer peut être plus agressive, plus douloureuse et plus lente à cicatriser. Ces lésions plus étendues nécessitent souvent des traitements longs et laissent le patient vulnérable au développement de formes de HSV résistantes aux traitements. Cette revue de 17 essais cliniques a trouvé des éléments de preuves suggérant que l'aciclovir est efficace dans la prévention et le traitement des infections HSV, en termes de prévention d'infections HSV clinique/culture positives, réduction du temps de cicatrisation, et durée d'expansion virale. Il n'y a pas de preuves permettant d'affirmer que le valaciclovir est plus efficace que l'aciclovir, ou qu'une haute dose de valaciclovir est meilleure qu'une faible dose. Des éléments de preuve montrent qu'en ce qui concerne la prévention, le placebo est plus efficace que la prostaglandine E. Cependant, dans tous les essais cliniques inclus, le risque de biais existe. Aucun essai clinique n'a rapporté de données sur la durée d'hospitalisation, la quantité d'analgésie nécessaire ou la qualité de vie.

Résumé

Contexte

Le traitement du cancer devient de plus en plus efficace, mais est associé à des complications buccales telle que des mucites, des infections fongiques, des infections bactériennes et des infections virales comme l'Herpes Simplex Virus (HSV).

Objectifs

Examiner les effets des méthodes de prévention et/ou de traitement de l'herpes simplex virus chez les patients recevant un traitement pour le cancer.

Stratégie de recherche

Nous avons recherché dans les bases de données suivantes : Cochrane Oral Health Group's Trials Register, CENTRAL, MEDLINE, EMBASE, CINAHL, CANCERLIT, SIGLE et LILACS. La bibliographie des revues de littérature et des articles considérés comme étant potentiellement pertinents, a été passée en revue pour obtenir d'autres essais cliniques. Les auteurs des essais cliniques identifiés ainsi que les spécialistes reconnus dans leur domaine, ont été aussi contactés dans le but d'identifier des publications additionnelles ou des essais non publiés. Date de la recherche la plus récente : Novembre 2008.

Critères de sélection

Tous les essais cliniques randomisés comparant les méthodes de prévention et/ou de traitement des infections HSV chez les patients sous traitement pour cancer. Les variables considérées sont la présence/absence d'infection HSV, positive cliniquement ou sur culture (prévention), le temps de cicatrisation complète (traitement), la durée de l'extension virale, la récurrence des lésions, le soulagement par analgésie, la durée de l'hospitalisation, le coût des soins buccaux, la qualité de vie du patient et les effets secondaires.

Recueil des données et analyse

Les données ont été extraites de manière indépendante, en double, par deux auteurs de la revue systématique. Les auteurs des essais ont été contactés pour des détails de randomisation, d'aveugle ou de répartition géographique, lorsque cela s'est avéré nécessaire. Une évaluation de qualité a été menée sur la randomisation, l'aveugle, la conception et le recueil des données. Les recommandations statistiques de la Collaboration Cochrane ont été suivies et les valeurs de risque relatif (RR) ont été calculées en utilisant des modèles à effets aléatoires.

Résultats principaux

17 essais ont rempli les critères d'inclusion. 4 essais cliniques ont évalué des méthodes préventives contre les lésions dues à HSV, 3 essais ont évalué des traitements et 8 essais ont évalué à la fois des mesures préventives et thérapeutiques. Une seule étude a rapporté des données sur le coût de prophylaxie pour le HSV. 2 essais ont évalué le traitement en terme de temps de cicatrisation, de durée d'expansion virale et de soulagement de la douleur. Aucun essai clinique n'a rapporté de données sur la durée d'hospitalisation, le niveau d'analgésie ou la qualité de vie.

Dans les essais cliniques contre placebo, l'aciclovir est efficace pour la prévention des infections HSV en terme de lésions buccales ou d'isolats viraux (RR = 0,16, IC 95% 0,08 à 0,31 sur 9 essais cliniques ; RR = 0,17, IC 95% 0,07 à 0,37 sur 9 essais). Il n'y a aucune preuve que le valaciclovir soit plus efficace que l'aciclovir, ou que des doses plus fortes de valaciclovir soient plus efficaces que de plus faibles doses. Le placebo est plus efficace que la prostaglandine E pour la prévention d'isolats viraux (RR = 1,87, 95% IC 1,12 à 3,14 sur une étude).

L'aciclovir semble plus efficace pour le traitement de l'HSV en terme de durée d'expansion virale (médiane de 2,5 jours ver-

sus 17 jours, p = 0,0002 ; 2 jours comparés à plus de 9 jours, p = 0,0008), de temps jusqu'à la diminution de la douleur (médiane de 3 jours versus 16, p = 0,04), de la disparition totale de la douleur (9,9 jours versus 13,6 jours, p = 0,01 ; médiane de 6 jours versus 16, p = 0,05), de cicatrisation à 50% (médiane de 6 jours versus 11, p = 0,01) et de cicatrisation totale (médiane de 13,9 jours versus 20,7, p = 0,08 ; médiane de 8 jours versus 21, p = 0,0).

Conclusions des auteurs

Il existe des éléments de preuves permettant d'avancer que l'aciclovir est efficace dans la prévention et le traitement des infections à l'herpes simplex virus. Il n'y a pas de preuves permettant d'affirmer que le valaciclovir est plus efficace que l'aciclovir, ou qu'une haute dose de valaciclovir est meilleure qu'une faible dose. Des preuves existent montrant que pour la prévention, le placebo est plus efficace que la prostaglandine E. Cependant, dans tous les essais cliniques inclus, le risque de biais existe.

Executive Director's message, *What's in a name?*
… continued from 135

ization—its members—for the association's direction and performance. As such, staying in places that are well lit and familiar may not be the wisest choice for leaders. The Board's role is to ensure that the diversity of ownership is reflected as fully as possible in their work, and in their governance as a team. Leaders, by virtue of being leaders are, as the two quotations suggest, at the forefront of thought and yet must stay in close proximity to their followership. This balance of forefront and proximity is sometimes difficult to find, thus consultation with the membership is critical. With respect to the potential name change, the high participation in online voting allowed the pulse of the membership to be taken. The Board is a group of passionate volunteer dental hygienists who, like the members they represent, are dedicated to their work and take pride in the association they lead. I would suggest that:

- the Board is not wasting time or money in their desire to pull the rest of us over the horizon, and
- any pulling is with care and forethought.

Members matter. You matter.

Message de la directrice générale, *Que trouve-t-on dans un nom?*
… suite 135

« Pourriez-vous, s'il vous plaît, cesser de perdre votre temps et de l'argent sur un non-sens ? On ne vous paie pas pour cela. C'est honteux ! »

Le conseil est responsable de la direction et de la performance de l'association envers les propriétaires de l'organisation – ses membres. Ainsi, demeurer dans des endroits bien éclairés et familiers n'est peut-être pas le choix le plus sage pour ses dirigeants. Le conseil doit faire en sorte de refléter autant que possible la diversité des propriétaires dans son travail et sa gouvernance en tant qu'équipe. Comme le disent deux des citations, en raison de leur poste, les leaders sont à l'avant-garde de la pensée mais ils doivent aussi demeurer en étroite proximité avec leurs membres. L'équilibre entre l'avant-garde et la proximité est parfois difficile à trouver, d'où l'importance vitale de la consultation. En ce qui a trait au changement de nom, la forte participation au vote en ligne a permis de prendre le pouls des membres. Le conseil est formé d'un groupe d'hygiénistes dentaires volontaires et dévouées qui, comme les membres qu'elles représentent, se consacrent à leur travail et sont fières de l'association qu'elles dirigent. Voici donc ma suggestion :

- *que le conseil ne perde ni temps ni argent dans son désir de nous attirer vers de nouveaux horizons;*
- *que toute démarche en ce sens se fasse avec soin et réflexion préalable.*

Ce sont les membres qui comptent. Vous comptez.

Advertisers' index

ABOUT THE COVER

The outer front covers in issues of volume 43 in 2009 feature "**Independent Practices**", supporting the spirit of entrepreneurship in dental hygienists who have broken ground to establish their own practices in Canada. This picture was one among the entries selected for the competition advertised between October and December 2008. Volume 43.4, July-August 2009. Photo credit: ©CDHA. Reproduced with the permission of Lori Lawrence and Jo-Ann Keays.

Smile Sensations Independent Dental Hygiene Clinic opened its doors a year ago. Proud owners, Lori Lawrence, RDH and President of the Dental Hygiene Practitioners of Ontario, and Jo-Anne Keays, Business administrator, have worked hard to prove the importance of dental hygienists' skills as an integral part of the dental community—a long road but one finally being recognized by the public for the unique Scope of Practice. They celebrate the significant change, "We now have control over how we deliver our services. What a dream come true!". e-mail: smilesensations@cogeco.net, www.smilesensations.ca

Position for commercial advertisement

Position for commercial advertisement