ISSN 1807 - 3107

Volume 26 • Supplement 1
[Hatton Award]
June • 2012

Brazilian Oral Research

Official Journal of the SBPqO - Sociedade Brasileira de Pesquisa Odontológica
(Brazilian Division of the IADR)

Brazilian
Oral Research

Cataloguing-in-publication

Serviço de Documentação Odontológica – Faculdade de Odontologia da Universidade de São Paulo

Brazilian oral research. – Vol.18, n. 1 (Jan./Mar. 2004) – São Paulo : SBPqO : 2004 – Bimestral
ISSN 1806-8324 versão impressa; ISSN 1807-3107 versão online
Continuação de: Pesquisa odontológica brasileira = Brazilian oral research, 14(2000) – 17(2003).
A partir do vol. 25, n. 1 (Jan./Fev. 2011), a periodicidade passa a ser bimestral.
1. Odontologia – Periódicos 2. Sociedade Brasileira de Pesquisa Odontológica

Indexing

The Brazilian Oral Research is indexed in:
Base de Dados LILACS: 1987- ; Bibliografia Brasileira de Odontologia (BBO): 1987- ; EBSCO Publishing: 2008-; GALE Cengage Learning: 2008-; Index Copernicus: 2008-; Medline/PubMed: 1984-; SciELO: 1997-; Scopus: 1989-; Ulrich's: 1986- .

Address for correspondence

Brazilian Oral Research - Editorial Office
Av. Prof. Lineu Prestes, 2.227
Cidade Universitária "Armando Salles de Oliveira"
05508-900 - São Paulo - SP - Brasil
Phone number: (55-11) 3091-7904
E-mail: *bor@sbpqo.org.br*

Instructions to Authors

Available in *http://www.scielo.br/revistas/bor/iinstruc.htm*

Subscriptions

SBPqO members: R$110.00;
SBPqO non-members: R$350.00;
Institutional: R$300.00; Abroad: US$120.00
Phone/Fax number: (55-11) 3091-7904
E-mail: sbpqo@sbpqo.org.br
Site: *www.sbpqo.org.br*

Disclaimer

The statements and opinions of the manuscripts submitted to and published in the BOR are solely those of the author(s), and not necessarily those of the Editorial Board or of the Sociedade Brasileira de Pesquisa Odontológica (SBPqO), Brazilan Division of the International Association for Dental Research (IADR).

Editorial Production

Ricardo Borges Costa

IMPRENSA CIENTÍFICA
www.ic.com.br

Sponsors

Associação Brasileira de Editores Científicos
ABEC Brasil

SciELO
BOR is a member of the Electronic Journals Database of SciELO

CNPq · CAPES · Ministério da Educação · Ministério da Ciência e Tecnologia · BRASIL UM PAÍS DE TODOS GOVERNO FEDERAL

Conquistas à frente da SBPqO

Giuseppe A. Romito
Presidente da SBPqO

Com a edição do presente suplemento da *Brazilian Oral Research* (BOR), estou completando minha gestão frente à Sociedade Brasileira de Pesquisa Odontológica (SBPqO). Não fugi à regra aplicável a todos os dirigentes eleitos: inicialmente muitos planos e expectativas, porém realizações que ficam aquém do resultado desejado. Continuamos com o sucesso das nossas reuniões anuais, com uma organização cada vez mais eficiente e algumas mudanças, como o retorno das apresentações orais com o objetivo de fortalecer a interação e o debate entre os pesquisadores de ponta de cada área. Mas ainda precisamos ser uma Sociedade que vai além da nossa reunião anual!

Após muita expectativa, teremos uma excelente Reunião Anual da IADR no Brasil. Entretanto, em função da alteração de local (de Rio de Janeiro para Foz de Iguaçu) e de condições próprias do nosso país, infelizmente a reunião não será o sucesso inicialmente esperado. Esta oportunidade, no entanto, está nos servindo para permitir um aprofundamento da discussão sobre o papel da IADR como uma entidade "internacional", cuja característica mais importante é justamente a diversidade de cultura e pensamento de seus membros, um atributo essencial não só para o desenvolvimento da pesquisa, mas também para o crescimento da própria entidade.

Ter um periódico forte é fundamental para a divulgação dos trabalhos de nossos pesquisadores, e a BOR vem caminhando com segurança a cada ano para ser um dos mais fortes e representativos periódicos da área de saúde no Brasil. Conseguimos passar de uma periodicidade trimestral para bimestral, e este ano passamos de B2 para B1 na classificação Qualis. Buscar metas cada vez mais ambiciosas é um dever, mas não podemos deixar de destacar estas importantes realizações já conquistadas. Os avanços da BOR se devem, sem dúvida, aos esforços constantes de toda a equipe de editores e equipe técnica da revista, e, em nome do Prof. Sigmar M. Rode, Editor Científico da BOR, gostaria de agradecer a todos.

O que são dois anos na trajetória de quase 30 anos da SBPqO? "A história é êmula do tempo, repositório dos fatos, testemunha do passado, exemplo do presente, advertência do futuro" (M. Cervantes). Obrigado aos membros dos Conselhos Diretor e Consultor, que se dedicaram à entidade e me acompanharam nessa trajetória, e obrigado a todos os associados que me apoiaram em momentos difíceis. A oportunidade de exercer a Presidência desta entidade foi muito importante para o meu crescimento pessoal e acadêmico. Estarei sempre disponível para trabalhar em prol do crescimento da nossa SBPqO.

HA001 Microtomography analysis of root canal preparation and obturation with reciprocating systems

Versiani MA, Leoni GB, De-Deus G, Pécora JD, Rached-Junior FJA, Silva-Sousa YTC, Sousa-Neto MD*
Odontologia Restauradora - UNIVERSIDADE DE SÃO PAULO - RIBEIRÃO PRETO
E-mail: marcoversiani@yahoo.com

The aim of this study was to compare the preparation and obturation of oval-shaped canals treated with Reciproc and WaveOne systems by using micro-computed tomography (μCT) analysis. Fifty mandibular canines were selected and scanned preoperatively and postoperatively by using μCT at a resolution of 19.6 μm. Canals were shaped with WaveOne 40.08 (n = 25) and Reciproc 40.06 (n = 25) and evaluated for cross-sectional geometry, volume, surface area, and structure model index (SMI). Then, root canals were obturated with single cone technique and the percentage of voids (POV) was calculated using μCT according to the formula: (100–(VF*100)/VC)), where VF is the volume of the filling material and VC is the volume of the canal after preparation. Data were statistically analyzed by Student *t* test for independent samples (α= 0.05). Overall, the percentage increase (%) of area, perimeter, roundness, major diameter, minor diameter, volume and surface area were significantly lower with Reciproc (37.1 ± 16.1; 8.8 ± 7.2; 16.3 ± 21.4; 7.4 ± 7.1; 44.3 ± 35.7; 31.7 ± 14.6; 7.8 ± 7.8, respectively) than WaveOne (62.8 ± 50.8; 20.4 ± 17.3; 37.3 ± 19.1; 15.8 ± 14.6; 45.9 ± 29.9; 62.3 ± 51.0; 20.1 ± 18.9, respectively) ($p < 0.05$). No statistical difference was observed in SMI ($p > 0.05$). The POV (%) in the canals obturated with WaveOne and Reciproc systems (3.8 ± 2.4 and 6.3 ± 3.8, respectively) were statistically similar ($p > 0.05$).

Both reciprocating systems respected the original configuration of the root canals, however geometry was more affected by using WaveOne than Reciproc. POV were similar and none of the root canal filled teeth were gap-free. (Apoio: FAPs - FAPESP - 2009/09989-0)

HA002 Doxycycline inclusion in β-cyclodextrin increases *in vitro* antibiotic activity on *Staphylococcus aureus* and osteoblast viability

Menezes AC, Peñaranda DFS, Bonilla JC, Trajano VCC, Gontijo SML, Denadai AML, Sinisterra RD, Cortes ME*
Odontologia Restauradora - UNIVERSIDADE FEDERAL DE MINAS GERAIS
E-mail: amilholo@hotmail.com

Doxycycline (Dx) is an antibiotic derived from tetracycline being commonly used in the treatment of periodontal disease. Inclusion complexes have been prepared with beta-cyclodextrin (βCD) in order to avoid bacterial resistance and chemical instability. In this study, we evaluated the *in vitro* antimicrobial activity of doxycycline:beta-cyclodextrin (Dx:βCD, 1:1 molar ratio) inclusion compound. For this, minimum inhibitory concentration (MIC) against *Staphylococcus aureus* (*S. aureus*, ATCC 27664) and its interaction with cellular membrane (zeta potential quantification; ZP) were assessed. Also, Dx:βCD citotoxicity on osteoblast was quantified by MTT metabolism (tetrazolium salt). Our data have shown that MIC values of Dx:βCD were six-fold higher than Dx alone, suggesting that inclusion of Dx improved its antimicrobial activity. In agreement, we showed that Dx:βCD compound displayed a significant increased binding on *S. aureus* membrane, as revealed by reduced ZP values (Dx isoelectrical point:1 mg/mL; Dx:βCD: 0.16 mg/mL). Also, inclusion of Dx to βCD led to significant increasing in osteoblast viability in comparison to Dx alone.

We concluded that when doxycycline was complexed with βCD a more effective inhibition on S. aureus *growth was achieved, with no cytotoxic effects on osteoblasts. Also, Dx interaction with* S. aureus *membrane was enhanced following βCD inclusion, suggesting that the improved antimicrobial efficacy of βCD compounds may be explained by a closer Dx-bacteria membrane interaction. (Apoio: CAPES)*

HA003 The influence of magnesium deficiency on osteoclast differentiation and activity

Belluci MM, Schoenmaker T, Rossa-Junior C, Orrico SRP, Vries TJ, Everts V*
Cirurgia e Diagnostico Bucal - UNIVERSIDADE ESTADUAL PAULISTA - ARARAQUARA
E-mail: bellucimarina@hotmail.com

Magnesium (Mg2+) is one of the most abundant mineral in the cell, and it is essential for many enzymatic reactions. Mg2+ deficiency is a common disorder that leads to bone mass loss and skeletal weakness. There has been little research regarding the effect of this deficiency on osteoclasts. The aim of this study was to evaluate the effect of Mg2+ restriction on the osteoclastogenesis and cell activity. Bone marrow cells from long bone and jaw of mice were seeded on plastic and on bone in medium containing different Mg2+ concentrations (0.8 mM which is 100% of the normal value, 0.4, 0.08 and 0 mM). After 3 days of incubation, the effect of Mg2+ deficiency was evaluated on cell viability, proliferation rate and mRNA expression of osteoclastogenesis-related genes and Mg2+-related genes. After 6 days of incubation, the proliferation rate was evaluated again, as was the number of tartrate resistant acid phosphatase-positive multinucleated cells (TRACP+-MNCs), and the TRACP activity of the medium. Osteoclastic activity was assessed at 8 days by resorption pit analysis. Mg2+ deficiency resulted in increased numbers of osteoclast-like cells; a phenomenon found for both types of marrow. Mg2+ deficiency had no effect on cell viability and proliferation. Increased osteoclastogenesis due to Mg2+ deficiency was reflected in higher expression of osteoclast-related genes. However, resorption per osteoclast and TRACP activity were lower in the absence of Mg2+.

In conclusion, Mg2+ deficiency augmented osteoclastogenesis but decreased the activity of these cells. This may contribute to the skeletal impairment seen in Mg+2 deficiency. (Apoio: CAPES - 2373/10-6)

HA004 Celiac disease: oral impact and study of dental enamel as a marker of the disease

Carvalho FK, Nelson-Filho P, Queiroz AM, Silva LAB, Silva RAB*
UNIVERSIDADE DO ESTADO DO AMAZONAS
E-mail: faforp@yahoo.com.br

Celiac disease (CD) is an autoimmune disorder characterized by gluten intolerance, assumed to be underdiagnosed owing to its wide spectrum of clinical presentation, and if untreated can lead to severe complications. Recurrent aphthous stomatitis (RAS) and dental enamel defects (DEDs) are some of the oral manifestations of CD. In this study, a group of 52 celiacs aged 2 to 23 years, along with an age and sex-matched control group, were evaluated for the presence of RAS, DEDs and caries, and were also subjected to salivary analysis – pH, flow and buffering capacity. Concurrently, 10 deciduous molar teeth from celiacs and 10 from a non-celiac group had their enamel chemically analyzed through spectroscopy. Finally, 27 children with DEDs were serologically tested (anti-tTG IgA) for CD. DEDs were found to be more common among celiacs (57.7% vs. 13.46%; $p < 0.001$), as well as RAS (40.38% vs. 17.31%; $p < 0.05$). Conversely, a lower frequency of dental caries was observed in the disease group (2.11 vs. 3.9; $p = 0.0071$). Salivary analysis showed a higher frequency of reduced flow in the celiac group (36% vs. 12%; $p < 0.0001$), while saliva pH and buffering capacity were statistically similar in both groups ($p = 0.5246$). Spectroscopy analysis revealed a lower proportion Ca/P in celiac teeth (1.35 vs. 1.58; $p = 0.0136$). Lastly, no celiac disease was found among the children with DEDs.

Considering that particular oral manifestations might be indicative of CD, dentists could play an essential role in helping the diagnosis of this condition. (Apoio: FAPs - FAPESP - 2010/20482-1)

HA005 Mutagenic effect of formocresol on pulp therapy of deciduos teeth

Alencar-Filho AV, Rosenblatt A, Leite ACGL*
Odontologia - UNIVERSIDADE DE PERNAMBUCO
E-mail: arnoldo_filho@terra.com.br

Objective:To investigate whether formocresol, in Buckley's original formulation, used for pulp therapy of deciduous teeth, can have mutagenic effect. Method: The sample comprised 40 children who had primary teeth with non vital pulps. Two venous blood samples were collected (6–8 ml) from each child, the first, prior to pulp therapy (control group) and the second 24 hours after pulp therapy (experimental group). The lymphocytes were grown in a complete culture medium consisting of 78% RPMI 1640 medium (a), 20% fetal bovine serum (b) and 2% phytohemagglutinin (c). The lymphocytes were assessed for chromosomal aberrations using a previously published method. The examiners were masked for the cytogenetic analysis, which was codified using numbers and letters. Each sample involved the analysis of 100 metaphases. The level of significance adopted for the statistics was 5.0% ($p < 0.05$). Result: There was a statistically significant difference in clinical doses between the control and treated groups (Wilcoxon's Signed Ranks test) for the isochromatid gap ($p < 0.001$), chromatid break ($p < 0.009$), isochromatid break ($p < 0.046$), other chromosomal alterations ($p < 0.001$) and for the total.

Conclusion: Although, on a long term follow-up, the samples may or may not show recovery of the cromossomal aberrations, based on the present results, the authors recommend caution in the use of formocresol in pediatric dentistry.

HA006 Histologic, histomorphometric and radiographic monitoring of bone healing around self-drilling orthodontic mini-implants loaded or not

Catharino PC C, Dominguez GC, Pinto-Jr. DS, Morea C*
Odontologia - UNIVERSIDADE DE SÃO PAULO - SÃO PAULO
E-mail: prichibebe@hotmail.com

The aim was to describe bone healing around self-drilling orthodontic mini-implants (MIs), sterilized in office, with or without immediate orthodontic load. Into 18 white rabbits's tibiae, 144 MIs (TOMAS®, Dentaurum) were inserted. Immediate load (50 cN) was applied to 50% of MIs. Two rabbits were sacrificed soon after the surgery (control group). Four rabbits each were sacrificed at day 15, 21, 30, and 60 after surgeries. Digital radiographs were obtained to measure the cortical bone thickness (CBT) around and between MIs. Sections were stained for histologic and histomorphometric analysis. Bone quantity (BQ), bone to implant contact (BIC) and CBT were statistically evaluated by coupled t-test, ANOVA and Pearson's correlation. At day 0, fractures were seen at cortical area around MIs. At days 15 and 21 intense bone proliferation was visible with woven followed by lamellar bone. After 30 days primary bone was with less proliferation activity. At day 60 primary bone was in remodeling process for the secondary bone. BQ was better with load after 15 days ($p = .034$) and increased throughout the healing period in loaded ($p = .004$) and unloaded ($p < .001$) groups. Load did not influence BIC values that increased with healing time in loaded ($p < .001$) and unloaded MIs. ($p = .001$). CBT increased in all regions ($p < .001$) being around the MIs greater than between them except for 15-day unloaded group ($p = .077$).

Immediate, light orthodontic load did not affect the bone-healing process around orthodontic MIs. Osseointegration and CBT increased and were time-related. (Apoio: FAPESP - 2010/09422-7)

HA007 Dynamics of hydrogen diffusion through human enamel and dentin

Ubaldini ALM, Sato F, Hayacibara MF, Medina-Neto A, Baesso ML, Pascotto RC*
UNIVERSIDADE ESTADUAL DE MARINGÁ
E-mail: adrianaubaldini@gmail.com

Hydrogen peroxide (H_2O_2) low molecular weight permits its rapid penetration into the pulp cavity. However, the diffusion dynamics of this agent through dental tissues has not been clarified yet. Therefore, the aim of this study was to determine the diffusion of H_2O_2 into enamel and dentin by Micro-Raman Spectroscopy (μ-Raman). Human intact enamel-dentin specimens were randomly divided into three groups according to the following tissue block thicknesses: G1- 1 mm ($n = 5$); G2- 2 mm ($n = 12$) and G3- 3 mm ($n = 12$). An industrial 25% H_2O_2 (pH = 5) was applied to the enamel surface and its opposite side μ-Raman spectra were measured not only after but also during its bleaching treatment, at the time interval of 10, 20, 30, 40, 50 and 60 min. Moreover, the H_2O_2 diffusion dynamics from enamel to dentin, passing through a dentin-enamel junction (DEJ), was obtained by a linear scan ($n = 5$). The results showed that the H_2O_2 μ-Raman band (O-O stretching) increased on G1 ($P > 0.02$) was minimal compared to G2 ($P < 0.02$) and G3 ($P < 0.02$). This scan analyses revealed that H_2O_2 rapidly crossed the enamel, had a higher concentration on DEJ, and accumulated on dentin. The H_2O_2 showed an exponentially decrease from DEJ to the final extension of the 3 mm dental tissue specimens.

These findings demonstrated that the H_2O_2 penetration is more than a physic mechanism through interprismatic spaces and dentinal tubules, suggesting that this diffusion dynamics presents a concentration gradient which is determined by the chemical affinity of the bleaching agent with each specific dental tissue.

HA008 Adhesion to dental hard tissues ablated with ultra-short pulsed lasers

Bello-Silva MS, Wehner M, Lampert F, Esteves-Oliveira M, Eduardo CP*
Dentística - CENTRO UNIVERSITÁRIO NOVE DE JULHO
E-mail: marinastella@hotmail.com

This study aimed to verify the possibility of introducing ultra-short pulsed lasers (USPL) in Restorative Dentistry by establishing laser parameters compatible to clinical use, as well as assessing microtensile bond strength of resin composite to irradiated dentin. Enamel and dentin were irradiated with USLP by varying laser wavelength (355, 532, 1,045, and 1,064 nm), pulse duration (pico and femtoseconds) and irradiation protocols (scanning speed, cooling, pulse repetition rate). Temperature increase, ablation rate and surface morphology were evaluated. The most favorable laser parameters were used for the microtensile bond strength of resin composite to irradiated dentin by using etch-and-rinse and self-etch adhesive systems with different bonding protocols (Clearfil SE Bond with and without Primer, Adper Single Bond with and without acid etching). Dentin and enamel irradiated with infrared pico- and femtosecond lasers presented rough surface without carbonization. Irradiation was better conducted with higher scanning speed and no additional cooling. When adequate parameters are used, temperature increase is not higher than 6.1ºC for enamel and 4.6ºC for dentin, when temperature increase was measured at the back side of 1-mm thick samples without cooling during irradiation. Bond strength values varied according to laser parameters and adhesive systems used, and showed either similar or significantly higher values for irradiated dentin than control groups, for all laser parameters analyzed ($p < 0.05$).

USPL are considered a promising technique for the promotion of laser-supported minimally invasive approach. (Apoio: FAPs - Fapesp - 2008/00668-3)

HA009 Bone mineral mass as a risk factor for temporomandibular disorders

Galhardo APM, Mukai MK, Yamaguchi CA, Mori M, Baracat EC, Gil C*
Prótese Dentária - UNIVERSIDADE DE SÃO PAULO - SÃO PAULO
E-mail: alessandrapmg@ig.com.br

Osteoporosis results from an imbalance in bone remodeling, a process that follows the phases of activation, resorption, reversal and formation. The cells that resorb bone are osteoclasts (Ocs) and it forming are osteoblasts (OBs). Essential elements do part of remodeling, such as RankL, its receptor (Rank), OPG, M-CSF, cytokines and hormones. Temporomandibular disorders (TMD) includes joint and/or muscle disorders related to temporomandibular joint (TMJ). The involvement of female hormones is raised, not least because estrogen receptors have been identified in the TMJ as well the expression of the elements that participate in bone remodeling (Rank, RankL, OPG). Therefore, we investigated the influence of bone mineral density in temporomandibular disorders (TMD) in postmenopausal women. For this purpose, 100 women aged between 48 and 70 were clinically evaluated by the Research Diagnostic Criteria for Temporomandibular Disorders (RDC / TMD). The data were compared to bone densitometry of the femoral neck and lumbar spine (L1-L4) and submitted to the Chi Square test, assuming a significance level of 0.05 and confidence interval of 95%. The results showed that risk posed by the TMD articular osteopenia was 1.33 ($CI^{95\%}$ 1.20 to 1.46), with an increase in risk of 0.33, while the risk of osteoporosis showed 1.39 ($CI^{95\%}$ 1.23 to 1.55), increased by 0.39. There was predominance of joint diagnoses (68.0%), while 18.0% of diagnoses were muscle and 14.0% corresponded to the absence of clinically diagnosable conditions, according to the RDC / TMD.

The decrease in female sex hormones and low bone mineral density may enhance the articular TMD risk.

HA010 Trabecular and cortical bone evaluation on images of patients with bisphosphonate related osteonecrosis of the jaws

Torres SR, Chen CSK, Lee P, Hollender L, Santos ECA, Drew SP, Lloid M, Schubert MM*
Patologia e Diagnóstico Oral - UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
E-mail: sandratorres@ufrj.br

Bisphosphonate related osteonecrosis of the jaws (BRONJ) is a consequence of bisphosphonate (BP) therapy. This study aim was to detect BP dimensional changes in the mandibular trabecular and cortical bone as measured from cone beam computed tomography (CBCT) and panoramic radiograph images. Fractal dimension (FD) was used to evaluate trabecular bone on CBCT images of BRONJ cases. The mandibular inferior cortical bone (MICB) was evaluated on CBCT images of BRONJ cases; and on panoramic radiographs of subjects using BP (with or without BRONJ). The volume, area and height of the MICB were measured below the mental foramen, within a rectangle varying in size with the cortical height on CBCT. On panoramic, the thickness was measured in a line perpendicular to the mandibular border intersecting the mental foramen. Data were compared to age and gender matched controls. One way analysis of variance and matched T test were used for statistical analysis, with $p < 0.05$. Thirty-seven subjects using BP were studied (10 with BRONJ). The mean FD of cases (1.69 ± 0.02) was higher than controls (1.67 ± 0.04; $p = 0.03$). The MICB measurements on CBCT were higher in cases (268.43 ± 189.54 volume; 49.54 ± 31.75 area; 6.05 ± 2.18 height), than in controls (135.32 ± 38.52 volume; 27.69 ± 7.71 area; 4.22 ± 0.80 height; all $p < 0.01$). The mean MICBT on panoramic of BP cases (5.78 ± 1.31) was higher than controls (4.83 ± 0.90; $p < 0.01$).

These results suggest that FD on CBCT images and cortical bone measurements on CBCT and panoramic radiograph images are promising tools for the detection of bone alterations associated with BP therapy. (Apoio: CAPES - BEX5403/09-0)

HA011 The complex hyaluronidase: HP β CD associated with local anesthesic prolongs rat sciatic nerve blockade

Carvalho C, Murakami VO, Kawakita CF, Gomes ADM, Sinisterra RD, Cortes ME, Santos MF, Borsatti MA*
Estomatologia - UNIVERSIDADE DE SÃO PAULO - SÃO PAULO
E-mail: ccarvalho@usp.br

It was shown that injecting the enzyme hyaluronidase (Hya) concomitantly with lidocaine, did not prolong the duration of the inferior alveolar nerve block. Otherwise, recent studies have shown that injecting the enzyme hyaluronidase before the recovery of inferior alveolar nerve blockade, it was able to prolong the local anesthesia. However, this protocol has the disadvantage of requiring a new puncture. To keep the benefits of hyaluronidase use to prolong the duration of anesthesia without having to inject it before the end of the anesthesia, this study proposed to inject lidocaine concomitantly with hyaluronidase, however, this one was incorporated in a nanoparticle, hydroxypropyl β -cyclodextrin (HP- β -CD), to delay its release, thus, it was created the complex Hya: HP-β -CD 1:1. Sciatic nerve block was performed in Male Wistar rats with 0.14 ml of local anesthesic (LA) 2% lidocaine HCl with epinephrine. The concentration of Hya was 75 turbinity-reducing units/mL (TRU/ mL). It was injected 0.18 mL of isolated Hya, and HP β CD. Nociceptive, motor and proprioceptive functions were tested by mechanical stimuli (analgesymeter), extensor postural thrust reflex and hopping response, to evaluated the nerve blockade. The animals were divided in groups: AL + Hya injected at 30 min of anesthesia; AL + Hya concomitantly; AL + Hya:HP β CD 1:1, concomitantly; AL; Hya; HP β CD. The AL + complex showed prolonged duration in functional blockade, longer ($p < 0.01$, ANOVA) than the others. Hya, HP- β CD *per se* caused no nerve blockade.

Hyaluronidase included in HP β CD associated with LA prolongs rat sciatic nerve blockade. (Apoio: FAPESP - 2007/57872-9)

HA012 The involvement of chromatin remodeling in the control of head and neck squamous cell carcinoma behavior

Giudice FS, Squarize C, Pinto-Jr. DS, Castilho R*
Estomatologia - UNIVERSIDADE DE SÃO PAULO - SÃO PAULO
E-mail: fernandagiudice@yahoo.com.br

Histone modifications are known to regulate chromatin structure and gene expression in adult cells and pluripotent stem cells. Here, we decided to evaluate the influence of histone acetylation over the biology of head and neck squamous cell carcinomas (HNSCC) and their stem cell-like population. Initially we show by cell sorting (FACS) and using the stem cells marker aldehyde dehydrogenase (ALDH), that HNSCC cell lines are capable of retaining a sub-population of pluripotent tumor cells. Following, conditioned media from human endothelial cells often found nearby the tumor stroma, induces chromatin acetylation and increases aggressivity of HNSCC cell lines (increased BMI-1 and vimentin levels). Next we induced chromatin acetylation in HNSCC cells through the administration of the histone deacetylase inhibitor Trichostatin A (TSA) following by the analysis of orospheres formation (cancer stem cell functional assay), along with the levels of ALDH, tumor proliferation index, and tumor invasion. Interestingly, TSA treatment resulted in significant decrease of the cancer stem cell sub-population by disrupting the orospheres and reducing the levels of ALDH. Also, TSA inducted Epithelial to Mesenchymal Transition (EMT) observed by the upregulation of vimentin and the induction of a fusiform phenotype along with increased tumor invasion and the levels of BMI-1.

Chromatin organization therefore is involved in the modulation of cancer stem cell-like cells where high levels of histone acetylation intensifies the aggressive behavior of HNSCC cells. (Apoio: CAPES)

HA013 T Cell-dependent arthritic bone erosion is induced by periodontal pathogens

Aquino SG, Abdollahi-Roodsaz S, Koenders M, Marijnissen RJ, Avila-Campos MJ, Cunha FQ, Cirelli JA, Van-den-Berg WB*
Diagnóstico e Cirurgia - UNIVERSIDADE ESTADUAL PAULISTA - ARARAQUARA
E-mail: sabrinaquino@yahoo.com.br

Objectives. Considering that infectious agents have been implicated in rheumatoid arthritis (RA) etiology, this study aimed to evaluate the influence of periodontal pathogens on severity of experimental arthritis. Methods. The effect of *Porphyromonas gingivalis* (*P.g.*) and *Prevotella nigrescens (P.n.)* on T cell profile and the activity of Toll-like receptors (TLRs) were studied using cells from wild-type and interleukin-1 receptor antagonist deficient (IL1-Ra$^{-/-}$) mice. *In vivo*, collagen-induced arthritis mice received oral inoculations of *P.g.* or *P.n.*. Joint histopathology, synovial gene expression, T cell phenotype, cytokine and anti-citrullinated peptide antibodies (ACPA) production were analyzed. Results. *P.g.* and *P.n.* induced Th17 differentiation and IL-17 production in a co-culture of splenic antigen-presenting cells (APCs) with CD4+ T cells. This effect increased in IL1-Ra$^{-/-}$ cells. Both bacteria reduced Th2 differentiation and induced low Th1 level. Th17 induction was dependent on TLR2 expression on APCs; the minor Th1 induction depended on TLR2 of T cells. *In vivo*, periodontal pathogens increased the clinical scores and bone erosion of arthritis, even without detection of ACPA and with no effect on cartilage. Draining lymph nodes showed an increase of IL-17, but not IFN γ and IL-17 levels were correlated with bone erosion. *P.g.* induced MMP-9 and Cathepsin K in synovium, while *P.n.* reduced Th2/IL-4 phenotype *in vivo*.

This study reveals the modulation of T cell phenotype as a relevant pathogenic role of periodontal pathogens on arthritis irrespective of ACPA induction, specially with respect to bone erosion. (Apoio: CAPES - 3758/10-9)

HA014 MMP3 gene promoter is unmethylated during chronic periodontitis

Cardoso R, Planello A, Oliveira NFP, Andia DC, Line SRP, Souza-Pardo AP*
Morfologia - UNIVERSIDADE ESTADUAL DE CAMPINAS
E-mail: renancardoso_rc@hotmail.com

Matrix metalloproteinase-3 (MMP3) is an enzyme that plays a crucial role in the destruction of extracellular matrix macromolecules during inflammation. Its activity is controlled at several levels, including DNA methylation, which represents an epigenetic event that may control gene expression. Thus, our interest in this study was to investigate DNA methylation status of CpG sites located at position - 635 and - 686 on the MMP3 gene promoter. Genomic DNA (gDNA) was purified from gingival tissue from 30 healthy individuals (control group) and 30 individuals with chronic periodontitis (periodontitis group). The analysis of DNA methylation status was performed by Specific Methylation-Sensitive Restriction Enzymes. 100 ng of gDNA of each sample was treated with Hpy CH4IV restriction enzyme to verify the methylation status of -635 and -686 CpG site. After, the samples were submitted to Polimerase Chain Reaction (PCR) using specific primers for amplifying a fragment of 445 base pairs. For all experiments, 100 ng of untreated gDNA of samples were also submitted to PCR as reaction control. Total RNA of samples was also purified from tissues to analysis of MMP3 transcripts using qPCR. Data were analyzed by Chi-square or Kruskal-Wallis test at level of 5%.We observed a tendency for unmethylation at -635 CpG site in MMP3 gene promoter in the periodontitis group in contrast to control group ($p < 0.05$). Transcripts levels of MMP3 were also observed at high level in the periodontitis group.

We conclude that DNA methylation may be associated with the control mechanism of MMP3 gene during inflammation, influencing the prognosis of the disease. (Apoio: FAPESP - 2011/13831-2)

HA015 Health literacy and oral health outcomes in an adult population

Batista MJ, Lawrence HP, Sousa MLR*
Odontologia Social - UNIVERSIDADE ESTADUAL DE CAMPINAS
E-mail: mariliajbatista@yahoo.com.br

Objective: To investigate the association between oral health literacy (OHL) and oral health outcomes (status and practices) in adults. Methods: Cross-sectional household probability sample of 248 adults, representing 149,635 20–64 year-old residents in Piracicaba-SP, Brazil. Socioeconomic, demographic, self-perceived health, oral health quality of life (OHIP-14), and health practices data were collected. The household oral examinations followed the WHO criteria for oral diseases. OHL was the main explanatory variable, measured using 5 Likert-response items which were dichotomized as High and Low OHL. Binary/multinomial logistic regressions were performed on each oral health status and practice outcomes, controlling for age, sex and socioeconomic status (SES). Results: 71.5% (n = 107,050) had low OHL. Low OHL was associated with untreated caries (Odds Ratio= 1.92, 95% CI= 1.07–3.45), tooth brushing < 3 times/day (OR= 2.00, 1.11–3.62) and infrequent tooth flossing (OR= 2.17, 1.24–3.80) when adjusted by age and sex only. Adjusting by age, sex and SES, significant ORs were found for low OHL when the outcome was: presence of biofilm (OR= 1.83, 1.08–3.33), dental care for emergency only (OR= 2.24, 1.24–4.04), and prevalence of oral health impacts on quality of life (OR= 2.06, 1.15–3.69).

Conclusion: OHL is related to oral health status and practices and could interfere with perceived impacts on quality of life. As low health literacy is modifiable, the results support oral health promotion strategies to improve oral health outcomes in this adult population. (Apoio: FAPs - Fapesp - 2009/16560-0)

HA016 Chi-square automatic interaction detection analysis of brazilian adults tooth loss profile according social capital

Borges CM, Campos ACV, Vargas AMD, Kawachi I, Ferreira EF*
Odontologia Social e Preventiva - UNIVERSIDADE FEDERAL DE MINAS GERAIS
E-mail: carolmborges@yahoo.com.br

There are few evidences of social capital effects over tooth loss. This study sought to describe the tooth loss profile in adults aged 35–44 years old, living in the surrounding area of a state capital comprised of 33 municipalities in Brazil. This cross-sectional study analyzed data from 1,013 individuals. Interviews and clinical oral exams were performed at dwellings. Tooth loss (> 5) dichotomized by median was the dependent variable. Covariates were social capital (high/low) measured by four indicators (group membership, participation in community projects, feeling secure or not when alone at home, desire/intention of volunteer in communities projects) gender, age, self-perceived skin color, marital status, per capita income, and educational background. Chi-square Automatic Interaction Detection (CHIAD) was employed to establish the characteristics of groups who were vulnerable to tooth loss by successive splits within data in order to make it as homogenous as possible considering the dependent variable as reference. Tooth loss prevalence was 42.5% explained by social capital ($p < 0.001$), age ($p < 0.001$), educational background ($p = 0.022$), and per capita income ($p = 0.037$). Tooth loss was higher among adults with low social capital (47%), aged 40–44 years (60.2%), with lower educational background (60.2%). In the high social capital group, tooth loss was determined only by age regardless income or schooling.

At individual level, high social capital may attenuate socioeconomic factors effects on tooth loss. CHAID flowchart is a useful tool to detect vulnerable groups. (Apoio: FAPs - Fapemig)

Indexes

AUTHOR

SUBJECT