国際セッション口演

（B会場）

5月12日（金） B会場　15：30～16：40

IO-01
2599

The influences of sialidase gene deficiency on *Porphyromonas gingivalis* pathogenicity

Chen Li

Keywords: *P. gingivalis*, Sialidase, Gingival epithelial cell, Chronic periodontitis

Objectives: The aim of this study was to investigate the influences of sialidase gene (PG0352) deficiency on *Porphyromonas gingivalis* pathogenicity.

Materials and methods: PG0352 deletion strain (△PG0352) of *Porphyromonas gingivalis* (*P. gingivalis*) W83 and the complemented strain (com△PG0352) were constructed by homologous recombination. Growth curve and biofilm formation were measured. The gene expressions of *fimA*, *fimR*, *fimS*, *kgp*, *rgpA* and *rgpB* in *P. gingivalis* were detected by real-time PCR. Cryoelectron microscopy and tomography analyses were used to observe *P. gingivalis* capsule. Human gingival epithelial cells (epi4) were stimulated by *P. gingivalis* at MOI 100: 1 for 6 and 24h. IL-1β, TNFα, and IL-8 were detected in both gene and protein levels by real-time PCR and ELISA, TLR-2, TLR-4, ERK, phosphor-ERK, JNK, phosphor-JNK, p38 and phospho-p38 were detected by western blotting.

Results: Sialidase deficiency did not influence *P. gingivalis* growth. Compared to the wild type, the *fimA* gene expression and Kgp and Rgp gingipain activity levels were decreased in △PG0352, △PG0352 failed to produce an intact capsule layer, formed less biofilm, induced less IL-1β and TNFα and more IL-8 in epi4, and the expression levels of TLR2 and JNK were lower in epi4 cells stimulated by △PG0352.

Conclusions: Sialidase gene has effect on *P. gingivalis* virulence factors and is involved in the interaction between *P. gingivalis* and human gingival epithelial cells.

IO-02
2504

Effects of Er:YAG laser irradiation on proliferation of human gingival fibroblasts

Sophannary Kong

Keywords: Er:YAG laser, Proliferation, Gingival fibroblast, Ki67, Transmission electron microscopy

Objective: Er:YAG laser is one of the most promising lasers for periodontal treatment. The aim of this study was to elucidate the effects of Er:YAG laser irradiation on proliferation of primary human gingival fibroblasts (HGFs).

Materials and methods: Outgrown HGFs from gingival connective tissues were cultured. After laser irradiation at 3.2 - 6.3 J/cm2, cell viability was examined using WST-8 assay, and ATP and LDH levels were measured. Immunostaining against Ki67 was performed, and ultra structural characteristics of laser-treated HGF were observed by transmission electron microscopy (TEM).

Results: Three days after irradiation, Er:YAG laser enhanced the cell viability at 3.24 and 6.28 J/cm2, while LDH level was increased only at 6.28 J/cm2. Ki67-positive cell number was higher in laser-treated HGF, compared with that in non-irradiated cells. The ATP level was also found to be elevated at 30 min. TEM observation revealed structural changes of mitochondria and rough endoplasmic reticulum at 3 hours, and the changes disappeared at 24 hours. The supernatant taken from irradiated HGF (6.28 J/cm2) enhanced the viability of non-irradiated cells.

Conclusion: These findings suggest that Er:YAG laser affects energy production and cell cycle in HGF and might thus result in promotion of cell proliferation.

IO-03
2504

EFFECT OF PLATELET RICH FIBRIN MEMBRANE WITH AND WITHOUT RELEASATE ON MUCOGINGIVAL SURGERY FOR GINGIVAL RECESSION TREATMENT: CLINICAL STUDY

VINCENSIA KARINA MARIA

Keywords: Platelet rich fibrin, Membrane, releasate, Gingival recession

Objectives: Gingival recession is the apical migration of the gingival margin from cementoenamel junction. The treatment of gingival recession is to cover tooth root that is exposed and fix the aesthetics problem. Maintaining the coverage level of the root with tissue regeneration is an important element in periodontal plastic surgery. Platelet rich fibrin (PRF) contains many growth factors which trigger tissue regeneration. PRF is usually used in compressed form. Byproducts compression PRF is releasate which is rich in growth factors. The purpose of this study was to determine the effect of compressed PRF with and without releasate on treatment of gingival recession by mucogingival surgery.

Materials and methods: In this study, the sample was divided into two groups: the control group coronaly advanced flap (CAF) with PRF membrane and treatment group CAF with PRF membrane combined with releasate. For the treatment group, PRF membrane was soaked into releasate and releasate was applied into wound area using 1 cc Syringe. Measurements were made on clinical parameters include recession depth, relative attachment level, keratinized tissue width, and gingival thickness which were measured at baseline, four weeks, and the twelfth week.

Results: The results this study showed reduction in recession depth and relative attachment level value, also increase in gingival thickness values between time. Kruskal Wallis and Mann Whitney test showed significant differences in recession depth, relative attachment level and gingival thickness between groups. There was no significant differences in keratinized tissue width.

Conclusions: The conclusions of this study were the addition releasate on PRF can improve the success of mucogingival surgical treatment of gingival recession using the parameter recession depth, relative attachment loss and gingival thickness, but has no effect on keratinized tissue width.

IO-04
3102

HUMAN TOOTH AS A BONE ALLOGRAFT

CHAITANYA PRADEEP JOSHI

Keywords: HUMAN TOOTH, ALLOGRAFT, SOCKET RESERVATION, BONE GRAFT

Objectives: To overcome limitations (limited availability, processing time) of autogenous tooth graft, for the first time in India, we prepared allografts using extracted human teeth in collaboration with Tata Memorial Hospital-TMH. Subsequently evaluated their efficacy in alveolar ridge preservation compared to conventional allograft-freeze dried bone allograft (FDBA).

Materials and methods: With patients' written consent, teeth were collected from three donors (who tested negative for HIV, HBV, HCV and VDRL). Whole tooth allograft (WTA), dentin allograft (DA) were prepared using TMH protocol. In a randomized controlled trial, fifteen patients selected undergoing extraction of at least four teeth. After atraumatic extractions; one socket was grafted with WTA, second with DA, third with FDBA and fourth was left ungrafted (control site). To estimate three dimensional alveolar crest changes, Cone Beam Computed Tomography scans were taken immediately after grafting and four-months post-operatively. Bone biopsies were taken at the time of implant placement.

Results: Clinically uneventful healing was observed at all sites. WTA and DA consistently showed superior results demonstrating least reduction in alveolar crest height and width and more new bone formation ($P<0.05$).

Conclusions: Rather than discarding extracted human teeth as biomedical waste; they can be utilized as allograft which is an economical, natural, biocompatible, predictable.

IO-05
2504

Effect of different hydroxyapatite: β-tricalcium phosphate ratios on the osteoconductivity and dimensional stability of biphasic calcium phosphate in the rabbit sinus model

Hyun-Chang Lim

Keywords: Biphasic calcium phosphate, Maxillary sinus, Osteoconductivity, Bone regeneration, Animal model

Objectives: The present study compared the osteoconductivity and the volume stability of biphasic calcium phosphate (BCP) with a high versus a low ratio of beta tricalcium phosphate (β-TCP) relative to hydroxyapatite (HA; i.e., 70:30 vs. 30:70) in the rabbit sinus model.
Materials and methods: Bilateral sinus windows were created in New Zealand white rabbits. Each sinus was assigned to one of two experimental BCP groups according to the HA:β-TCP ratio. One sinus was grafted with BCP with a high ratio of β-TCP (i.e., 70:30; TCP70) and the contralateral sinus was grafted with BCP with a low ratio of β-TCP (i.e., 30:70; TCP30). The animals were sacrificed after 2, 8 and 16 weeks of healing. Biopsy specimens were harvested and evaluated histologically, histomorphometrically, and with microcomputed tomography (micro-CT).
Results: The total augmented volume (TV) and new bone volume (NV) in micro-CT did not differ significantly, but the resorption of materials was statistically higher in the TCP70 group at 16 weeks. The total augmented area (TA), new bone area (NA), and bone-to-material contact (%NPC) in histomorphometry did not show statistical difference between the TCP70 and TCP30. Trabecular thickness, number and separation were not statistically significant between both groups.
Conclusions: The BCPs with HA: β-TCP = 3:7 and 7:3 were demonstrated to be comparably effective in maintaining volume stability and bone formation.

IO-06
2599

Dental calculus induces pyroptotic cell death in the HSC-2 oral epithelial cell line

ZIAUDDIN SM

Keywords: Dental calculus, Epithelial cells, Cell death, Inflammasome

Objectives: Previously we found that dental calculus could induce IL-1β production via NLRP3 inflammasome in mouse and human phagocytes. However, the effect of dental calculus on oral epithelial cells has not been explored. This study aimed to examine if dental calculus could induce inflammasome-mediated cell death (pyroptosis) in human oral epithelial cells.
Materials and methods: HSC-2 human oral squamous carcinoma cell line was stimulated with dental calculus obtained from periodontitis patients. For inhibition assays, the cells were stimulated with dental calculus in the presence or absence of cytochalasin D (endocytosis inhibitor), glyburide (NLRP3 inflammasome inhibitor) or z-YVAD-fmk (caspase-1 inhibitor). Following 24 hours incubation, the cytotoxicity was detected by measuring LDH release and/or staining with propidium iodide (PI).
Results: Following the stimulation with dental calculus, HSC-2 cells released LDH and were stained with PI in a dose-dependent manner. The LDH release was significantly inhibited by cytochalasin D, glyburide and z-YVAD-fmk.
Conclusions: Dental calculus could induce cell death in HSC-2 cells. The inhibition of cell death by cytochalasin D, glyburide and z-YVAD-fmk indicated that the cell death was pyroptotic. The induction of epithelial cell death by dental calculus may be important for the etiology of periodontitis.

IO-07
2599

Relationship between metabolic syndrome and periodontal disease among Vietnamese Adults: A case-control study

Thuy Anh Vu Pham

Keywords: Metabolic syndrome, Periodontal disease, Vietnamese adult

Objectives: Metabolic syndrome (MetS) and periodontal diseases are emerging worldwide community health problem. The aim of this study was to assess the relationship between metabolic syndrome and periodontal disease in an Vietnamese adults population.
Materials and methods: A total of 412 participants (114 males, 298 females; mean age 57.8 years old), aged 50-78 years including 206 subjects with metabolic syndrome (MetS group) and 206 age- and sex-matched controls without metabolic syndrome (Non-MetS group) was selected from Examination Department, the Traditional Institute of Medicine, Ho Chi Minh City, Vietnam, 2014-2015. Clinical criteria for metabolic syndrome included: 1) abdominal obesity; 2) increased triglycerides; 3) decreased high-density lipoprotein cholesterol; 4) hypertension or current use of hypertension medication; and 5) high fasting plasma glucose. Periodontal parameters including plaque index (PI), gingival index (GI), probing pocket depth (PD) and clinical attachment level (CAL) were examined.
Results: The prevalences of moderate and severe periodontitis in the MetS group were 16.5% and 21.4%, while these were 12.6% and 6.8% respectively in the Non-MetS group, ($p<0.001$). The periodontal parameters (PI, GI, BOP, PD and CAL) were all significantly higher in the MetS group compared than those in Non-MetS group. The periodontal parameters (GI, BOP, PD and CAL) were significantly increased by the higher numbers of metabolic component. Study subjects with MetS were approximately 1.8 times more likely to develop periodontitis (95% CI = 1.17-2.75) after adjustment for other covariates.
Conclusions: This study supports the hypothesis that MetS may be a risk factor for periodontal disease in Vietnamese adults. Additional studies with larger and more diverse populations are needed to substantiate our findings.