

Annual Congress and Medicare Expo on **Trauma & Critical Care**

March 07-09, 2016 Madrid, Spain

The putative role of epithelial rests of Malassez in alleviation of traumatic occlusion effect on denervated rat periodontium

Mai Badreldin Abdelaziz Helal
Tanta University, Egypt

Background: Traumatic occlusion provides a trauma that distresses the whole tooth and its supporting tissues. Epithelial cell rests of Malassez (ERM) are odontogenic epithelial cells located throughout life within the periodontal ligament (PDL) matrix. Recent studies suggested that ERM may have their role not only in maintaining the normal width of the periodontium but also has a significant manner in periodontal regeneration and homeostasis.

Aim: The aim of the present study was to investigate the role of ERM in alleviating the deteriorating effect of traumatic occlusion on normal and denervated rat periodontium.

Material & Methods: Sixty, 7 month old male rats were used in this study. They were randomly and equally divided into 5 groups i.e., control, sham, denervated, traumatic occlusion and traumatic-denervation groups. In the latter group, the right inferior alveolar nerve (IAN) was exposed and transected before getting inside the mandibular canal through a 2.5 cm skin incision made along the posterior border of the mandible. Then, after 1 week recovery, the occlusal surface of the right maxillary first molar was unilaterally raised 1-2 mm with our innovative 7/8 nickel chrome stainless steel crown with free distal surface. Three rats, from each group, were euthanized at 1, 3, 6, and 9 weeks. Half of their right mandibular first molars specimens were dissected and processed for light microscope (LM) and the other half were processed for transmission electron microscope (TEM) using routine and pop-off techniques.

Results: Histological observations after 1 and 3 weeks, revealed disorganization of PDL fibers of the mandibular first molars of all rats in the denervated and/or traumatic occlusion groups in contrast to those of the control and sham groups, which disclosed normal structured PDL with few clusters of ERM cells throughout the study periods. Remarkably, traumatic occlusion group depicted rise in ERM clusters that disclosed secretory apparatus by EM whereas denervation and traumatic-denervation groups illustrated reduction in size of ERM clusters and cells which revealed apoptotic and karyolytic cells with rarified cytoplasm. On the other hand, after 6 weeks both traumatic occlusion and traumatic-denervation groups illustrated reorganization of PDL in association with increase in ERM clusters whereas, denervation group revealed further decline in ERM cell numbers and features together with PDL hyalinization and signs of dentoalveolar ankylosis. Interestingly, healing signs were observed after 9 weeks in all experimental groups that was marked by the existence of secretory ERM cells.

Conclusions: ERM is not a vestigial functionless remnant, but it is an active dynamic group of cells that portray the condition of the periodontium. There are resting ERM in quiescent PDL, apoptotic ERM in traumatized and or denervated ERM and secretory ERM in recovering periodontium.

Biography

Mai Badreldin Abdelaziz Helal is Assistant Lecturer of Oral Biology, Faculty of Dentistry, Tanta University, Egypt. In 2009, she received her Bachelor of Dental Medicine and Surgery, Faculty of Dentistry, Tanta University, Egypt with general grade Excellent, Honor. In 2015, she received her Master of Science in Oral Biology with general grade excellent, Faculty of Dentistry, Tanta University Egypt. The title of received her Master thesis is "The putative role of epithelial rest of Malassez in alleviation of traumatic occlusion effect on denervated rat periodontium". As a biologist, her main field of research focuses on periodontal homeostasis and largely, the dynamic role of epithelial rest of Malassez to sustain, repair and regenerate para-dental tissues, under different physiological conditions. Also, she is interested on isolation, characterization of dental epithelial stem cell, hopefully, to help in mediating dental tissue repair and/or regeneration.

mai_badreldin@yahoo.com