“Characteristics of Dentoalveolar Lesions and their Associated Pathogenesis Using Molecular Methods”

Alaa Muayad Altaie: U17200755@sharjah.ac.ae
Ph.D. program in Molecular Medicine, University of Sharjah, Sharjah, United Arab Emirates

Abstract:

Periapical lesions are among the most frequently occurring pathological lesions of the alveolar bone. They are the sequelae of pulpal inflammation or necrosis with inflammatory mediators spreading through the apical foramen to initiate periapical lesions formation. If the intact pulp chamber is breached, colonization of the root canals occurs with a diverse mix of microbial agents. After entering the periapical tissues via the apical foramen, these microbes are capable of inducing inflammatory changes leading to abscess, cyst, and granuloma formation. The pathological behavior of microbes in these lesions and the related host responses can be clarified using molecular methods including bacterial metagenomics and fungal metabarcoding, which illustrate the composition of associated microbes. On the other hand, the development of each lesion is characterized by specific micro-environment that shapes the aforementioned interaction and responses. Metabolomics and proteomics analyses are powerful techniques that can help to create a more holistic understanding of cell behaviors and progression of disease. The manifestations of the three dentoalveolar lesions (granuloma, abscess, and cyst) are different, suggesting different micro-environment that shapes specific developmental and progression characteristics. Unique and characteristic metabolic profile in each lesion is associated with diverse bacterial and fungal growth companied with different host responses. The main goal of this research study is to maintain a good oral and dental health status. Careful understanding of the micro-environment of each lesion will help to critically identify the developmental and progressive players. This will potentially support the design of treatment strategy that can overcome the severity of the condition and rescue the dental and oral tissues.

Supervisor & Co-Supervisor names:

- University of Sharjah:
  - Main Supervisor: Prof. Rifat Hamoudi
  - Co-Supervisor: Dr. Sameh Soliman & Prof. Lakshman Perera Samaranayake.

Recent Publications:


Submitted Papers:


Ongoing Papers:


