In the NEWS .....

European Society of Endodontology

Young Investigator Research Grant 2020 awarded to Satnam Singh Virdee

The European Society of Endodontology (ESE) awards young researcher grants to support young investigators in the early phase of their research career in Endodontology ("young" investigator in the context of this award is defined as an individual who is 'professionally' young in academic terms rather than in chronological age, e.g. pre-doctoral students at all levels (MSc, PhD students and equivalent), and up to 3 years following the award of a PhD (or equivalent). See: http://www.e-s-e.eu/research/young-investigator-research-grant.html

Project

Title: Optimising methods for sampling periradicular tissue fluid during root canal treatment and identifying inflammatory biomarkers for asymptomatic apical periodontitis.

Project Summary: This project focuses on developing a standardised operating procedure for analysing inflammatory mediators within periradicular tissue fluid (PTF) during non-surgical root canal treatment. A recent systematic review conducted by our group revealed that existing methods of PTF sampling and analysis are too heterogeneous and there is currently no concensus on which analytes should act as biomarkers for periradicular disease. With such considerations in mind, the aim of the initial *in vitro* segment of this project is to determine how basic parameters such as paper point brand, size, insertion depth and sampling duration influence the absorbance of PTF. This portion of the project will also investigate which of the previously used eluting methods and buffers give way for the greatest recovery of a representative recombinant periradicular inflammatory analyte (i.e. IL-1β). The results of these experiments will be used to develop an optimised sampling procedure that allows for maximum PTF absorbance and elution.

The second *in vivo* component of this project will take the form of a cross-sectional study and aim to identify potential biomarkers of periradicular disease. The optimised protocol will be used to sample PTF from patients diagnosed with asymptomatic apical periodontitis (test group) and normal apical tissues (control). Initially, a semi-quantitative broad inflammatory cytokine array will be used to screen for analytes present in collected samples. Proteins in the test group that are significantly higher in relative abundance to those in the control group will be selected for further quantitative analysis using a customised sandwich-based antibody array. Comparisons will be made between the concentrations of individual inflammatory mediators within each group to identify those which significantly increase or decrease as a result of periradicular inflammation. These will be considered appropriate inflammatory markers which can be correlated against different disease states of periradicular inflammation.

The information attained from this project could contribute to the development of molecular diagnostic strategies which would help clinicians determine disease states, inform prognosis and establish a point at which treatment should be concluded. It could also provide researchers with more objective tools to investigate the biological processes involved in periradicular disease, and their response to novel interventions that would otherwise go undetected at a clinical and radiographic level.

Career

Post-nominal Initials: BDS, MFDS RCSEd, PGCert DentEd, FHEA

Position: PhD student, Clinical Lecturer & Speciality Registrar in Restorative Dentistry

Organisation: Institute of Clinical Sciences, School of Dentistry & Birmingham Dental Hospital, University of Birmingham, Birmingham, United Kingdom

Career Summary: Satnam qualified from the University of Birmingham in 2013, completed several dental core training posts across the United Kingdom and is currently appointed as a Clinical Lecturer & Specialty Registrar in Restorative Dentistry at the University of Birmingham. During this period, Satnam developed a keen interest in Endodontology, which led to him enrolling on a doctoral research programme under the supervision of leading academics within the field. He is currently investigating the efficacies of more biologically driven strategies for treating periradicular disease. His research so far has resulted in several publications in peer reviewed journals, oral and poster presentations and the acquisition of multiple national and international awards included the highly esteemed Wladimir Adlivankine research prize from the European Society of Endodontology. Satnam is striving to be a leading clinical-academic within this field and is hoping to achieve this by continuing to conduct high-quality research, supporting the future academic and clinical workforce and training to manage challenging clinical cases.