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Medication related osteonecrosis of the jaw (MRONJ): Computer assisted assessment of pathological skeletal changes

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Medication related pathological changes in mandibular bone due to oncologic treatment are a serious burden. Clear display of the progression of the disease is still a challenge in clinical diagnosis. Therefore, a detailed research project focused on CT-/CBCT-based visualization of necrotic changes was initiated. To start with, all available CT-/CBCT data of the patient are registered on a suitable reference. After several refined image processing and programming steps, the data are subjected to slice oriented direct volume rendering with various (mostly logarithmic) transfer functions specially designed for the respective purpose. For medication related pathological changes, besides destructive skeletal changes, severe sclerosing processes within trabecular structure are reported. Destructive processes correspond to decreased Hounsfield values, whereas sclerosation is indicated by increasing ones. For this purpose, we refer to visualization based on an “inverted temperature color scale”. As kind of control, visualization based on healthy subjects can be considered. Additionally, we compare the affected and the non-affected (or less affected) mandibular side. For healthy controls, the new method provides a clear and uniform appearance of the alveolar ridge. However, for pathological cases, serious changes in trabecular bone are ipsilaterally reported. Considering several follow-up CT data, progression of the described changes over the whole mandible was observed. Recent achievements for computer assisted visualization for necrotic changes in mandibular bone are presented. Besides diagnostic significance, this research is aimed at diagnosis efficiency. The new visualization methods help the surgeon to examine the pathological changes at one glance.

Biography

Britt-Isabelle Berg has completed her Medical degree at the University of Lübeck and her Dental degree at the University of Freiburg, Germany. Since 2005, she works at the Clinic of Cranio- Maxillofacial Surgery at the University Hospital Basel, Switzerland. Currently, she is in charge of the Dentomaxillofacial Radiology at the University Hospital Basel. In between, she worked in Great Britain (Eastbourne, Brighton), France (Paris) and the United States (New York City). She has authored/co-authored over 20 papers. She has presented over 30 lectures herself and was co-author in over 50 other presentations (national and international).

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