EDITORIAL

Advances in maxillofacial radiology: Horizons to reach

The digital revolution has propelled our field into the most dynamic times of medicine, rivalling the introduction of antibiotic, and introduction of X-rays. Today, as we take account of our epoch-making history in the field of maxillofacial radiology, we should humbly acknowledge the achievements of the pioneers who threw light on the various disease process with minimal diagnostic assistance.

The growth of maxillofacial radiology was simultaneous with the developments in the field of cancer therapy namely radiotherapy. Targeted therapy required the clinicians to exactly localize the tumors and know the biochemical behavior of the neoplasm with minimal mortality of adjoining tissue. The role of oral and maxillofacial radiology was limited until the encroachment of neoplasms into the aerodigestive tract. The discovery of computed tomography (CT) scan in the 1970’s by Hounsfield gave an impetus to the field of radiology to think in three dimensions. With its ubiquitous presence, today multidetector computerized scan with 64 ring detectors has become the norm of the day.\(^1\) The advent of magnetic resonance imaging (MRI) was a quantum jump in diagnostic imaging of body, including imaging of head and neck pathology. It has added value for detection of soft tissue extent, marrow involvement, and perineural spread. The excellent tissue characterization and multiplanar imaging capability of MRI results in more accurate diagnosis of neoplastic and benign processes. Spin echo imaging is still the mainstay of MRI, but now various new techniques hold promise for the future of head and neck imaging.\(^2\) A new initiative in the field of MRI scan is blood oxygen level-dependent MRI. It is a non-invasive functional imaging technique that can identify hypoxic cancers which are likely to respond to accelerated radiotherapeutic treatment with radiosensitizers. It has been used successfully to detect decreased hypoxia in the malignant solid tumors and shows promise for tailoring treatment for hypoxic head and neck cancers in future.\(^3\) The introduction of cone beam CT (CBCT) has changed the face of maxillofacial radiology. Larger field of view helps to encompass an array of diagnostic needs. Higher resolution with minimal radiation is the key for the popularity of CBCT. Today, CBCT is synonymous with dental radiology for assessment of tumors, cysts, implant imaging, assessment of root canals for endodontic treatment, and a host of other indications.\(^4\) Ultrasound (USG) has been reserved for imaging of the abdomen. However, with recent advances in the transducer systems, scope of USG has been extended to head and neck region also.\(^5\)

Advances in imaging of neoplasms of the head and neck region are worth noting. The use of positron emission tomography (PET) has been instrumental in staging, identifying tumor recurrence, and evaluation of the prognosis of therapy. PET is based on tumor metabolic activity and hence is more sensitive than CT or MRI alone. The combination of PET with CT has added to the advantages of radionuclide imaging in dentistry. However, the frequency of use of PET by the maxillofacial radiologist has been dismal. This could be due to lack of knowledge and awareness about the various aspects of PET.\(^6,7\)

This issue highlights some of the recent advances in maxillofacial radiology by means of comprehensive reviews, research articles, and survey studies which give hindsight into the recent developments in the field of maxillofacial radiology.

Tejavathi Nagaraj

Department of Oral Medicine and Radiology, Sri Rajiv Gandhi College of Dental Sciences and Hospital, Cholanagar, Hebbal, Bengaluru - 560 032, Karnataka, India. Email: tejavathi6@gmail.com
doi: 10.15713/ins.jmrps.19

References
