CASE REPORT

CT imaging findings of a calcifying epithelial odontogenic tumour

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ABSTRACT. We report a case of calcifying epithelial odontogenic tumour (CEOT), also known as a Pindborg tumour, with local aggressive behaviour. CT imaging showed a large expansile bone-forming lesion in the mandible, which showed the exact extent and nature of the lesion. We briefly discuss the imaging features of CEOT and the relevant literature.

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A calcifying epithelial odontogenic tumour (CEOT) is a rare benign odontogenic neoplasm described in 1955 by Pindborg and is now known as a Pindborg tumour. This lesion represents approximately 0.4–3.0% of all odontogenic tumours [1]. To the best of our knowledge, the imaging characteristics of CEOT have been reported in only two cases in the literature [2, 3]. We present the CT findings of a CEOT, discuss the contribution of CT to its diagnosis and review the relevant literature.

Case report

A 33-year-old female presented with a progressive, painless enlargement of left lower jaw, which she had had for 3 years. A clinical examination revealed a well-defined huge extra-oral bony, hard non-tender swelling involving the left body and angle of the mandible. Intra-orally, a well-defined hard, non-tender swelling was seen in buccal vestibule extending from the mandibular left first premolar to the retromolar region with bicortical expansion present. The left lower first molar was missing.

An orthopantomograph revealed a large mixed radio-opaque–radiolucent lesion in the left body and angle of the mandible with extension into the ramus and with an intact lower border of the mandible. An unerupted first molar was pushed towards the inferior border of mandible. The calcifications were concentrated around the unerupted first molar (Figure 1). CT images were obtained in axial, coronal, sagittal and panoramic views with a three-dimensional (3D) reconstruction. The coronal section revealed a large expansile multilocular and trabeculated lesion involving the left half of the body of the mandible including the level of the ramus and the

alveolar margin and was seen extending up to symphysis (Figure 2). The lesion had thinned out and destroyed the mandibular cortices (lingual to buccal) and infiltrated the oral cavity as well as the soft tissue. An impacted unerupted first molar was seen within the lesion (Figure 3). Multiple ossicles and ossific densities with 500–1800 HU were seen throughout the lesion; however, they were more concentrated at the crown of the unerupted first molar. Multidimensional CT reconstructions using hard and soft tissue algorithms demonstrated the size and extent of the lesion, which was essential for surgical planning (Figures 4, 5).

Fine needle aspiration cytology was performed and the cytology smear demonstrated features suggestive of a CEOT. A surgical excision was carried out under general anaesthesia and histological analysis confirmed a CEOT.

Discussion

A CEOT is a benign neoplasm of unknown cause related to the odontogenic apparatus. It occurs frequently between 30 and 50 years of age with no gender predilection [4]. The tumours are divided according to the two topographical variants as intra-osseous (central type) and extra-osseous (peripheral type) [5]. The central variety is the most common type (95%), usually located in the premolar and molar regions with a mandibular to maxillary ratio of 2:1 [6]. The literature reports that this intra-osseous tumour usually manifests as a painless swelling that causes slow bone expansion [3]. Philipsen and Reichart [5] recently reported 50 cases of intra-osseous CEOTs associated with an unerupted tooth, of which 52% of the teeth were identified as mandibular molars. Our patient also had an unerupted mandibular first molar.

Radiologically, the descriptions of CEOTs are varied, such as pericoronal radiolucency, radiolucency with

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Figure 1. A cropped image of an orthopantomograph showing a large mixed radio-opaque–radiolucent lesion on left body and angle of mandible with an unerupted first molar (36) within the lesion.

radio-opaque flecks and mixed radiolucent–radio-opaque lesions not associated with impacted teeth or a dense radio-opacity [7–9]. The clustering of radio-opaque flecks at the coronal area of impacted teeth is a feature originally described by Pindborg and is considered by others to be typical of a CEOT [3]. Our case showed more calcifications at the crown of the unerupted first molar. Radio-opaque bodies within a CEOT have been described as occasionally creating a pattern reminiscent of “driven snow”, indicating the direction of growth of the tumour [3, 8]. Displacement of teeth within the

Figure 2. A coronal section showing a large expansile lesion involving the left body of mandible and extending up to the ramus and symphysis.

Figure 3. A coronal section showing an unerupted first molar within the lesion. The calcifications are more concentrated around the crown of the unerupted molar.

tumour or at the periphery is a common finding. Root resorption is uncommon; this feature may assist in the differential diagnosis between a CEOT and a solid ameloblastoma [3].

On CT scans, they were seen as high attenuation lesions suggesting calcifications and ossifications. CT scans and 3D reconstructions were useful in delineating the extent of the lesion, calcifications, the presence of an unerupted tooth and a break in the cortex which is essential for surgical planning. Treatment of a CEOT consists of surgical removal including a marginal portion

Figure 4. A multidimensional CT reconstruction using a hard tissue algorithm showing the extent of the lesion, which is useful for surgical planning.

Figure 5. A multidimensional CT reconstruction using a soft tissue algorithm showing the extension of the lesion.

of apparently healthy bone. A minimum 5-year observation period is suggested [10].

Conclusion

CT imaging should streamline the process of interpretation, but ultimately, histological examination is mandatory for diagnosis of a CEOT.

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