

Radio-Opacities of the Cervical Region on Panoramic Radiographs: Report of 3 Cases

SUMMARY

Objectives: The objective of this case report was to determine radio-opacities of the cervical region on panoramic radiographs using doppler ultrasound.

Methods: 3 patients with radio-opacities of the cervical region on digital panoramic radiographs were referred to doppler ultrasound for further diagnosis.

Results: In 2 cases carotid artery calcifications were identified as an irregular radio-opaque mass on panoramic radiographs. The calcifications in the third case were diagnosed as calcified lymph nodes due to a previous cervical abscess.

Conclusions: Calcifications detected by panoramic radiographs may be due to the carotid arteries and various anatomic structures like the hyoid bone, cervical lymph nodes, epiglottis, stylohyoid ligament etc. In the present report, calcifications in the carotid arteries should be distinguished from other radio-opacities in this area as they may be an early sign of cardiovascular diseases.

Keywords: Carotid Artery Calcifications; Panoramic Radiographs; Cardiovascular Disease

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CASE REPORT (CR)

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Introduction

Radio-opacities of the cervical region detected on panoramic radiographs may be due to either various anatomical structures like hyoid bone, styloid process, stylohyoid ligament, stylomandibular ligament, thyroid cartilage, epiglottis, soft palate, tongue, auricle, atlas, vertebrae, or different pathological lesions like carotid arteries calcifications (CAC), calcified lymph nodes, phlebolits, submandibular salivary gland sialoliths, loose body, tonsilloliths, calcified acne. It appeared that distinguishing carotid artery calcifications on panoramic radiographs from other differential diagnoses could be difficult and subject to subjective interpretation¹.

In the present report, 2 cases with calcifications in the carotid arteries should be distinguished from other radio-opacities in this area as they may be an early sign of cardiovascular diseases.

Case Reports

Case 1

A 72-year-old male patient presented to our Oral Diagnosis and Radiology clinic with a complaint of dental caries. His medical history revealed atherosclerosis and mild heart failure that was controlled with oral medication. He had no history of stroke. A digital panoramic radiograph (Promax, Planmeca, Helsinki, Finland) was taken during his dental examination (Fig. 1). Irregular, non-homogenous radio-opacities were seen inferior to the angle of the mandible and the region of C3 and C4 on the right. The patient was referred to the doppler ultrasound for further diagnosis. Ultrasound examination confirmed radiographic finding of carotid calcifications on panoramic radiograph. Echogenic calcified plaques were seen in carotid arteries with 40-45% stenosis (Figs. 2-4).

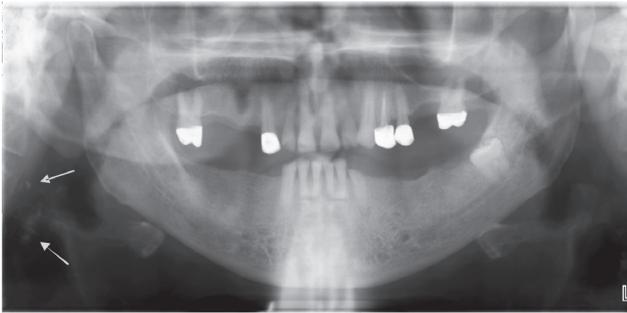


Figure 1: Panoramic radiograph of the patient.

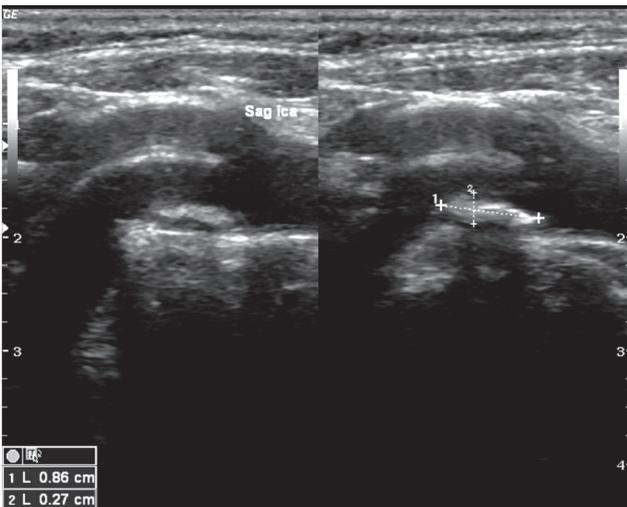


Figure 2: Doppler ultrasound imaging of the right carotid artery of the patient.

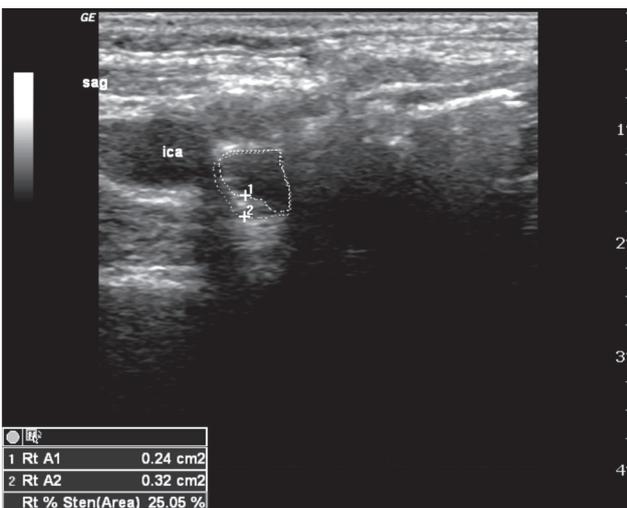


Figure 3: Doppler ultrasound imaging of the right carotid artery of the patient

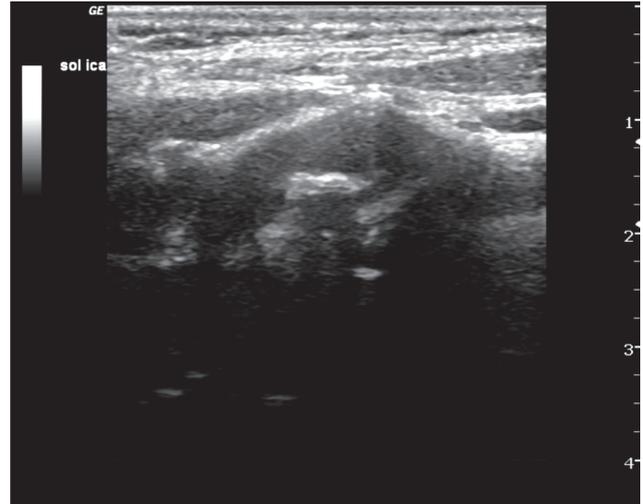


Figure 4: Doppler ultrasound imaging of the left carotid artery of the patient.

Case 2

A 62-year-old female patient presented to our clinic for a comprehensive dental care. She had atherosclerosis and hypertension controlled with oral medication and she had no history of stroke. On digital panoramic radiograph, radio-opaque lesions were detected inferior to the angle of the mandible and the region of C3 and C4 on the right (Fig. 5). The radiographic findings of calcifications in the cervical region were analysed by the doppler ultrasound. Echogenic calcified plaques were seen in both the right and the left carotid arteries.



Figure 5: Radiopaque lesions on panoramic radiograph.

Case 3

A 62-year-old female patient presented to our clinic for routine control. Her medical history showed that she had chronic renal failure due to polycystic kidney, allergy and hypertension which was controlled with

oral medication. On the digital panoramic radiograph which was taken during her dental examination (Fig. 6), multifocal radio-opaque masses of various dimensions were observed inferior to the angle of the mandible and the region of C3 and C4 on the right. The patient was referred to the doppler ultrasound analysis for further diagnosis. According to the doppler ultrasound report, no pathological process was detected.

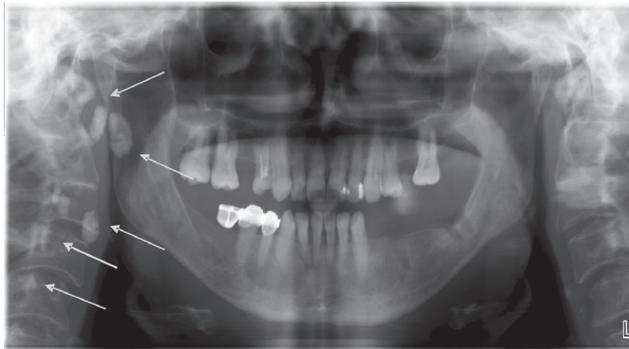


Figure 6: Radiopaque masses on panoramic radiograph.

Discussion

In recent years, a number of publications described detection of calcifications in the region of the bulb on panoramic radiographs¹. Calcifications in the cervical carotid arteries (CAC) were found on the panoramic radiographs of 3% to 4% of patients older than 55 years who were free of neurologic symptoms²⁻⁴. Avcu et al⁵ found CAC on 2.5% panoramic radiographs of 1160 patients. CAC appeared as an irregular, heterogeneous, vertico-linear, or circular radio-opaque mass inferior to the angle of mandible and adjacent to the cervical vertebrae at the level of C3-C4 inter-vertebral junction⁶. In these case series, all the radio-opaque lesions were identified inferior to the angle of the mandible and the C3-C4 cervical region.

All of the 3 presented cases had cardiovascular disease or hypertension and no history of stroke. CAC were detected during the routine dental examination, without any complaints reported by the patients. In the first 2 cases, CAC were identified as irregular radio-opaque masses on panoramic radiographs. The calcifications in the third case were diagnosed as calcified lymph nodes due to a previous cervical abscess the patient suffered according to the medical history.

Kansu et al⁷ reported that the incidence of CAC was higher in haemodialysis patients and renal transplant

recipients. Although the third case in this presentation had chronic renal failure, the radio-opacities on the panoramic radiograph were not diagnosed as CAC. Nevertheless; it is only 1 patient who has been evaluated in the present report, and a general statement cannot be made based on only 1 particular patient. Studies focusing on multiple patients with renal diseases, such as the one by Kansu et al⁷, should be performed to make more valid conclusions.

In the presence of suspicious CAC, differential diagnosis include thyroid cartilage tip calcification, aberrant soft-tissue calcifications, calcified lymph nodes, phleboliths, calcified acne and calcification associated with atherosclerosis within the carotid arteries⁸. In this case presentation, the radio-opaque lesions of the first and second cases were diagnosed with thyroid cartilage tip calcification. The third case was identified as calcified lymph nodes after the doppler ultrasound examination, which showed the necessity of further examination. In a previous study, digital panoramic radiographies were found to be effective in detecting carotid artery atheromas⁹. Also digital panoramic radiography was used to identify carotid artery calcifications in our cases.

In conclusion, dentists must be cautious about the radio-opacities in the cervical region on panoramic radiographs and keep in mind that these kinds of calcifications may be an early sign of cardiovascular disease. Further examinations, like doppler ultrasonography, should be performed to validate the initial diagnosis .

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