

Incidental Finding Radiopaque Materials on Panoramic Radiographs as a Result of Oil-Based Contrast Media - A Case Report

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Abstract

Foreign bodies are relatively uncommon on a dental panoramic radiograph. A variety of foreign bodies can produce radiopacities on dental radiograph. Herein, we report a rare case of long-standing incidental radiopaque materials that presented in the skull on a panoramic radiograph of a 60-year-old patient. The medical history of the patient revealed that she had undergone myelography with an iodinated oil-based contrast medium 18 years ago for diagnosis of spinal disease.

Keywords: Panoramic Radiograph; Radiopaque Materials; Residual Contrast Medium

Introduction

The term radiopacity can be used to describe a feature that is relatively white on a radiograph [1]. The presence of radio-opacities within both hard and soft tissues results from normal structures and abnormalities. These abnormal radiopacities are due to an increase in mineralization e.g. sclerosing osteitis, chronic inflammatory changes in bone, artifacts, and foreign bodies or opaque materials [2]. These abnormal radiopacities are often difficult to distinguish from each other, hence making the formulation of differential diagnosis challenging. Multiple distributed radiopacities suggest a systemic rather than a local cause. Therefore, it is necessary to identify such radiopacities early. A comprehensive patient's history and clinical examination will enable the clinician in making a definitive diagnosis and to identify the condition accurately. We presented here a case of the multiple radiopacities on postero-inferior (PA) and lateral skull and panoramic radiographs in a 60-year-old female patient.

Case Report

A 60-years female presented to the clinic (LS) with a recent panoramic radiograph (Figure 1). The patient attended the clinic to replace maxillary second right premolar. The panoramic radiograph revealed incidentally discrete, small, well-defined and non-corticated radiopacities in the right and left middle cranial fossa. The

mandibular left second premolar; maxillary second right and left molars, maxillary second right premolar and all third molars were missing. Root resorption was not evident. An initial clinical examination showed neither crepitating nor clicking on mouth opening in the temporomandibular joint bilaterally. Furthermore, no deviation of the mandible was observed. The oral mucosa was normal, and the lymph nodules were not palpable. No trigeminal paresthesia was diagnosed, and the facial nerve function was preserved. Extraoral examination revealed facial symmetry. There was no history of fever, vomiting, giddiness or vision defect. Following initial evaluation, a PA and lateral skull radiographs were advised. The PA and lateral skull radiographs (Figures 2 and 3) showed multiple, well-defined calcified shadows in the skull; the overall shape is almost circular. The skull bones and the sella turcica were normal. The missing maxillary second right premolar was replaced with fixed bridge. The patient reported that she had undergone myelography with iodinated oil based contrast at the age of 42 years. The contact with her radiologist confirmed her report. The radiologist stated that, he used iodized oil containing contrast medium in myelography to detect pathology of the spinal cord. The physician consultation reported healthy patient and there were no signs of intracranial hypertension. Moreover, blood and urine tests were normal. The oral and maxillofacial surgeon's (Khaled Alouf) report excluded the presence of intracranial lesions.

Figure 1: Panoramic radiograph demonstrated well-defined and non-corticated radiopacities in the middle cranial fossa.



Figure 2

Figure 3

Figure 2 and 3: PA and lateral skull views and showed radiopacities in intracranial and ethmoidal sinuses.

Discussion

The X-ray imaging is very sensitive to even relatively small differences in atomic structures of tissues and other materials. Myelography is used for diagnosing pathologies of the spinal cord [3]. A puncture is made into the thecal sac with a spinal needle and a contrast medium is injected into the sac, followed by X-ray studies [4]. The contrast media are radiopaque substances, which alter artificially the density of different parts of the patient [5]. In the modern era with the advent an array of imaging modalities such as computerized tomography (CT) and magnetic resonance imaging (MRI) the role of myelography in diagnosis has been limited. However, there are still indications for myelography. Patients with either medical or dental implants generally are generally not considered for MR imaging [6]. Other reasons include financial limitations or in cases that makes image acquisition and interpretation extremely difficult (e.g. Kyphoscoliosis) [7]. The most common complication of myelography is spinal headache, which is reported to occur in 4 - 60% of procedures [8]. Spinal headache generally begin within 48 hours but may be delayed for many days [9]. In our study, the patient reported that she had headache for 9 months after myelography. This complication may be attributed to the contrast agent which may be oil-based or water soluble [10]. In our case, the radiologist used a radiographic iodinated oil-based contrast medium Myodil. This contrast medium is absorbed and excreted very slowly from the body hence extremely slow rate of clearance. Myodil can persist within the central nervous system, as either encapsulated droplets, which may calcify, or remain as a thin film [11]. In our case, these droplets were seen as radiopaque materials in intracranial, ethmoidal sinuses and in middle cranial fossa. Following injection of contrast medium in myelography, the patient usually rests for several hours, with the head elevated at least 30 degrees to ensure that the contrast agent does not enter the intracranial cerebrospinal fluid (CSF) spaces and hence prevent headache. In our case it seems that, the patient did not follow the instructions of the operator to keep her head elevated and as a result iodine entered the intracranial spaces. Moreover, the patient is encouraged to drink fluids to avoid dehydration and to help flush the contrast dye out of his system. Contrast media can be seen as remnants in imaging studies of the brain or spinal cord, such as CT or MRI even after years. In this study, the remnants were seen in panoramic radiograph. It was reported a case of complete disappearance of intracranial radiopaque iodinated oil-based contrast medium over 20 years [11]. Correspondingly, it was documented presence of residuals of iodinated oil-based contrast medium for 34 years [12].

The current case suggests that the iodinated -based contrast medium might remain unchanged for a long period of time and may be incidentally seen on panoramic and skull radiographs. This case emphasizes the importance of identifying these rare features which continue to present even decades after abandonment of oil-based myelography

The differential diagnoses include multiple osteomas of the rare inherited condition Gardner’s syndrome. Furthermore, the craniofacial fibrous dysplasia which demonstrates a variety of radiographic features ranging from lucency to sclerosis.

Based on report of the medical history of the patient and the radiologist’s report, it can be concluded that the radiopacities are due to retention the iodine in the skull. According to available data no similar cases to the currently reported case were found.

Conclusion

Report of a case of incidental radiopaque materials on panoramic radiograph is presented. Residual of oil based contrast medium can still be seen in practice and may be misinterpreted as a disease. Our study indicates that the clinician should consider these atypical radiological findings as rare presentation of remnants of oil based contrast medium.

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