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Unusual Incidental Findings on Intraoral and Extraoral Radiographs in North Indian Population: A Radiographic Study

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ABSTRACT

Aims and Objectives: To detect the prevalence of Unusual Incidental findings on intraoral and Extraoral radiographs in North Indian Population: A Radiographic Study.

Methods: All the intraoral and extraoral conventional dental radiographs were analyzed for the period of two year along with the radiographic findings related to patient's chief complaint.

Results: Total 6780 conventional intraoral and extra oral dental radiographs were screened and 90 radiographs showed incidental findings. Total 10 varieties and 95 numbers of incidental findings were noted, 50 (55.55%) affected mandible, and 24 (44.44%) affected maxilla. Out of 90, 44 (48.88%) were bony findings and 46 (51.11%) were dental findings. Most common type of incidental pathology was idiopathic osteosclerosis. The most uncommon type of incidental pathology was regional odontodysplasia with 35 (38.88%), 25 (27.77) cases of cysts, 16 cases of supernumerary teeth (17.77%), 9 (10%) cases of sinus abnormality, 4 (5.40%) of each findings were of odontome, dense in dente, internal resorption and calcifications. 1 (1.11%) of each findings were regional odontodysplasia, focal cemental dysplasia.

Conclusions: Conventional radiography is still most commonly used tool to primarily investigate lesions quickly with low cost to patient and then further diagnostic and advanced radiological or other examinations can be performed for comparison, periodic follow up, management, and research purposes.

INTRODUCTION

Radiographic incidental findings of abnormality refers to the occult or hidden abnormality that exhibits no clinical signs and symptoms but is present as an incidental finding when the radiograph is taken to detect some pathology related to the patients chief complaint. Commonly the radiographs are prescribed when the dentist thinks that they are likely to offer useful diagnostic information that will influence the treatment plan. Often some clinical sign or symptom or finding from the patient's history indicates the need for a radiologic examination. The information obtained from clinical examination is used first to select the appropriate radiograph and later to aid in their interpretation^[1]. Radiographic incidental findings in the jaws include a combination of dental and/or introsseous findings. The consequences of some these incidental findings may be quite serious^[2]. Therefore one should avoid limiting attention to one particular region of the film; rather, all aspects of each image should be examined systematically. If the presence of any abnormalities detected in advance, the prognosis is improved, moreover it may reduce the mortality and morbidity rate to some extent.

There are only limited studies that have analyzed the prevalence of abnormal findings in radiographs ordered primarily for chief complaint related findings. Most of these studies described as an isolated case reports on dentigerous cysts, KOT (keratocystic odontogenic tumor), Gorlin Goltz syndrome and maxillary sinus or TMJ pathologies. Only two studies handled this

topic in patients with pre-treatment orthodontic panoramic radiographs (OPG) whereas in the present study patients from all age groups were included. Thus the aim of the present study was to evaluate the prevalence of incidental findings of abnormalities on conventional dental radiographs.

AIMS AND OBJECTIVES

To detect the prevalence of Unusual Incidental findings on intraoral and Extraoral radiographs in North Indian Population: A Radiographic Study.

MATERIALS AND METHODS

This prospective study was conducted in Department of Oral Medicine and Radiology, Genesis Institute of Dental Sciences & Research, after getting the approval from ethical committee. To evaluate the prevalence of incidental findings of abnormalities all the intraoral and extraoral conventional dental radiographs were screened along with the radiographic findings related to patient's chief complaint. Radiographs were not prescribed as a screening tool. All radiographic examinations performed during January 2013 to January 2015 at the Department of Oral Medicine and Radiology, were included in the study.

RESULTS

The patients in this study were advised radiographs as a part of routine investigative procedures for their chief complaints like panoramic radiographs (OPG) for orthodontic and periodontics work up, intraoral periapical (IOPA) radiographs for evaluating periapical region, lateral oblique for third molar and so on. Total 6780 conventional intraoral and extra oral dental radiographs were screened and 90 radiographs showed incidental findings. Total 10 varieties and 95 numbers of incidental findings were noted. Out of 8962 radiographs, 4546 were of males and 2234 were of females. Out of 6780 radiographs 90 (0.013%) radiographs showed incidental findings. Out of these 95 incidental findings 51 (53.68%) affected males and 44 (46.31%) affected females. Out of 90, 44(48.88%) were bony findings and 46 (51.11%) were dental findings. Most common type of incidental pathology was idiopathic osteosclerosis (**Figures 1 and 2**). The most uncommon type of incidental pathology was regional odontodysplasia with 35 (38.88%) (**Figures 1 and 2**) 25 (27.77%) cases of cysts (**Figure 3**), 16 cases of supernumerary teeth (17.77%), 9 (10%) cases of sinus abnormality, 4 (4.40%) of each findings were of odontome, dense in dente, internal resorption and calcifications, 1 (1.11%) of each findings were regional odontodysplasia, focal cemental dysplasia.



Figure 1. Intra -Oral X ray film showing idiopathic osteosclerosis.



Figure 2. Panoramic radiograph showing idiopathic osteosclerosis.

The most common type of incidental pathology was idiopathic osteosclerosis (38.88%). The most uncommon type of incidental pathology found was regional odontodysplasia. The second most common type of incidental pathology that was encountered was 25 (27.77%) cases of cysts, out of which 15 were KOT; 4 were dentigerous cysts; 3 were Stafne cysts (**Figure 3**) and 3 were radicular cysts. The third type of incidental pathology was 16 (17.77%) cases of supernumerary teeth. Out of these 16 supernumerary teeth 10 were in maxillary anterior region and remaining 6 were in mandibular premolar- molar region. The fourth type of incidental pathology was sinus abnormality 9 (10%) cases.



Figure 3. Panoramic radiograph showing Stafne bone cyst.

DISCUSSION

Detection of incidental finding is not a deliberate procedure to find out one. However its presence is appreciated during radiographic evaluation of the patient for the purpose which is not related to the incidental finding of abnormality. Hence these are found on routine radiographic evaluations. Most common abnormalities usually found in bone are radiolucent, mixed or radiopaque lesions associated with the teeth and introsseously in the jaws and may present as an incidental findings on radiographs apart from the chief symptom of a patient.

The cause of idiopathic osteosclerosis is obscure. It is asymptomatic, uniformly radiopaque foci of dense bone, usually with distinct outlines, that are apparently not the sequelae of infection or systemic disease. It has also been claimed that many radiopacities described as idiopathic osteosclerosis may be developmental variations of normal bony architecture, unrelated to local stimuli, which can arise at any age and at any location in the jaws [3]. When the lesion is present in the alveolus between first and second premolar its occurrence is generally described as a sequela of retained roots. These retained roots are resorbed and replaced by sclerotic bone, or fragments of the roots are surrounded and obliterated by the condensed bone [4]. Bondemark et al. [5] found 22 cases of idiopathic osteosclerosis. Idiopathic osteosclerosis does not require any treatment.

An important characteristic of the KOT is its propensity to grow along the internal aspect of the jaws, causing minimal expansion [6]. The relatively slight expansion common with these cysts probably contributes to their either late or incidental detection.

A dentigerous cyst is the most common developmental odontogenic cyst. It may grow to a large size before they are identified. Most are diagnosed upon investigations done for a tooth that has failed to erupt, or as an incidental radiographic finding, as they are usually not painful unless secondarily infected. The most commonly affected teeth are impacted mandibular third molars and permanent maxillary canines. Farah et al. incidentally found dentigerous cyst associated with 38 [7]. Gonzalez et al. found bilateral dentigerous cysts with impacted mandibular canines in a 10-year old girl who had come for an initial orthodontic workup [8]. Ramesh et al. [9,10] found dentigerous cyst and Stafne bone defect as an incidental findings on a dental radiograph. Cysts definitely require histopathologic confirmation and enucleation which was carried out in these cases.

The supernumerary teeth are more commonly encountered clinically as well as radiographically. The impacted supernumerary tooth requires disimpaction to avoid cyst formation or development of malocclusion [11].

The maxillary sinuses are of particular importance to dentist because of their proximity to dental structures. Part or all of the paranasal sinuses may appear on radiographs made for dental purposes, including maxillary periapical, panoramic and lateral or postero-anterior cephalometric skull radiographs. Antral polyp rarely causes any signs or symptoms and is often noticed as an incidental finding on radiographs made for other purposes. It usually requires no treatment because they customarily resolve spontaneously without any residual effect on the antral mucosa and periodic follow up may be required. One case of thickening of mucosal lining was seen in PNS which is frequently regarded as non-pathologic even if in some cases it can be associated with symptoms. One case of antrolith was found in IOPA, antroliths usually occur within the maxillary sinus and thus are positioned above the floor of maxillary antrum in periapical, occlusal or panoramic radiographs [12].

Most odontomas (70%) are associated with abnormalities such as impaction, malpositioning, diastema, aplasia, malformation and devitalization of adjacent teeth and should be removed as early as possible [13-15]. Early identification of internal resorption is vital, it may be transient and self-limiting or progressive, if endodontic treatment is started early or in time it halts the resorption. Most cases of dense in dente are discovered fortuitously and can be identified even before tooth erupts. Failure of early identification may result in premature tooth loss or they require root canal treatment.

Thus the data acquired from the findings of this study put forward that radiologist should not only interpret characteristic findings of the pathological conditions related to the chief complaint of the patient but also analyze coincidental findings. Moreover this is not the one time activity but it's an on-going process.

CONCLUSIONS

It can be concluded that detailed and elaborate reports prepared by oral and maxillofacial radiologists may bring many important aspects, which can simply be overlooked, into clinicians' attention. Therefore to detect more and more incidental finding a thorough radiographic examination should be accomplished by applying a step by – step analytic process in a systematical order to enhance the scrutiny of all parts of images which can maximize the likelihood of detecting all abnormalities. Conventional radiography is still the most commonly used tool to primarily investigate lesions quickly with low cost to patient and then further diagnostic and advanced radiological or other examinations can be performed for comparison, periodic follow up, management, and research purposes.

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