

‘Ponytail’ artefact on Waters radiography

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Various factors may lead to artefacts in many radiological examinations that are commonly used in daily clinical practice.^{1,2} There are some simple but important rules to obtain high quality X-ray images and proper diagnosis with the imaging guidance. Artefacts may result in difficulty in interpretation of images, unnecessary workup and even improper diagnosis.³ Hair artefact that were seen in young girls and female patients, has been rarely reported to be a problem.⁴ It has been reported on conventional radiographs of the skull, neck and even chest radiographs. Hair artefacts may be caused by structural features or style of hair bounding. In most cases these radiopacities were caused by braids, curls and, obviously synthetic hair braid extensions. Ponytail style hair artefact on radiography has been reported very rarely. We report here ponytail hair style artefact seen on paranasal sinus X-ray images of a young girl. The parents has consented to this report.

CASE REPORT

A 6-year old girl was admitted to emergency department with a severe headache that made her wake up from sleep and cry. She complained of 1-year history of moderate-severe throbbing and pulsating headache lasting from 5 to 20 minutes in bilateral frontal region, recurring 1-2 times in a month. The headache was not associated with nausea, vomiting, photophobia, phonophobia or any position, it responded to analgesics. Physical examination on admission revealed nothing remarkable. Paranasal sinus X-ray imaging was performed and showed a 2 cm sized nodular opacity which was suspected being an osteoma in frontal sinus. Paranasal sinus computed tomography (CT) was recommended by radiologist with the suspicion of osteoma. The department of otorhinolaryngology was consulted and paranasal sinus CT scan was performed, which showed no abnormality except minimal mucosal thickening at the base of the left maxillary sinus. Cranial bone CT scan was recommended considering that suspicious nodular lesion might be posteriorly located, which could not detected on paranasal sinus CT examination. Before taken the second CT examination, the patient was given oral antibiotics for sinusitis and referred to the department of neurology. The patient was evaluated by a pediatric neurologist and her physical and neurological examinations were normal. Since the patient was unable to clearly describe the type of headache due to her age, cranial magnetic resonance imaging (MRI) was

performed to reveal the lesion previously seen on paranasal sinus X-ray. Cranial MRI demonstrated no pathological lesion. After treatment of sinusitis, patient’s headache resolved and did not recur. When patient’s family was further questioned during follow-up, they informed that the patient’s hair was tightly tied back in a ponytail during the first paranasal sinus radiography. It was thought that the suspicious lesion might be a hair binding style artifact. A second paranasal sinus radiography was repeated without hair binding and revealed no pathology. Therefore, previously detected nodular lesion was considered as an artefact caused by ponytail style hair binding.

DISCUSSION

Radiography using X-rays is one of the most commonly used diagnostic radiological examinations among all clinicians. However, some artefacts may occur for various reasons, causing difficulty in image interpretation, unnecessary workup and even improper diagnosis.^{2,3}

Transillumination, ultrasonography (USG), X-ray scan, CT and magnetic resonance imaging (MRI) methods may be used for imaging sinuses. Although the value of sinus X-ray in the evaluation of sinusitis in pediatric patients is controversial, it is still used in daily clinical practice. Because these conventional modalities are initially taken to save time and money before proceeding to other technique of examinations. To obtain high quality X-ray images without any artifact, correct techniques must be used and some important

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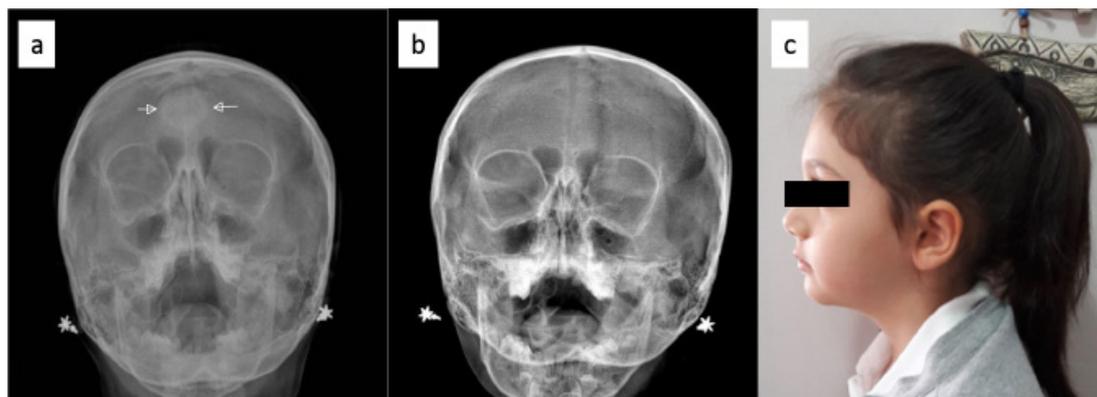


Figure 1: (a) First paranasal sinus X-ray showing 2 cm sized, well margined nodular opacity in superior portion of the frontal sinus, suspicious for osteoma. (b) Repeated radiograph taken with loose hair shows no opacity. (c) The binding of hair with ponytail shape.

preventions must be taken.^{2,3} Patients must be instructed to remove all objects such as head scarf, hair clip, earring, necklace etc.

It is known that braids, hair curls, postiches or hair transplants may be seen as radiopaque artefacts on chest and cranial radiographs, mammography causing confusion during diagnostic process.^{1,4} Even the hair itself may lead to artefact on radiogram related to structural features of hair.⁴ Especially in the binding of hair with ponytail shape, a dense radiopaque image may be seen on radiographs when the hair is bound top of the scalp.⁴ This radiopacity may be considered as a bony tumoral lesion and may led to unnecessary further evaluations as seen in our case.^{1,4} As clinicians, we should always evaluate pathological results considering clinical condition of patient and be aware of possible errors related to patient, examination or laboratory to avoid misdiagnosis.

We want to emphasize that artefacts which caused by hair should be considered while obtaining and evaluating sinus radiographs. The binding of hair with ponytail shape artefact may especially be important for young girls, which may complicate diagnostic workup. When the radiopacities detected on radiographs, the condition of hair style of the patients during the images taken should be asked.

DISCLOSURE

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