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Case Report

Petrified pinna in a porter: a case report

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ABSTRACT

This case report examines a rare instance of acquired petrified ear, a condition characterized by calcification or ossification of the auricular cartilage, potentially attributable to chronic mechanical pressure in an occupational setting. The study details the clinical presentation and radiological findings of a 50-year-old market porter who routinely carried heavy loads on their left shoulder, resulting in persistent compression of the left ear. Physical examination revealed a rigid, thickened, and smaller left pinna compared to the right. The patient did not report any associated pain. The patient had no history of trauma or metabolic disorders. There was no hearing impairment. Imaging confirmed that the left pinna was calcified. This case suggests a strong link between chronic occupational mechanical strain and the development of petrified ear.

Keywords: Petrified ear, Calcified pinna, Ossification, Auricular cartilage, Chronic mechanical pressure, Occupational hazard

INTRODUCTION

Petrified ear is a rare condition characterized by calcification or ossification of the auricular cartilage. It has various causes, including trauma, systemic diseases, and idiopathic causes.[1] While previous reports have detailed cases associated with genetic disorders and incidental findings, the impact of chronic mechanical pressure, particularly in occupational settings, remains less explored.[2] This case report presents an unusual instance of acquired petrified ear in a market porter, likely attributable to prolonged, repetitive pressure on the pinna.

CASE REPORT

A 50-year-old man was admitted for treatment following a road traffic accident. A screening computed tomography (CT) scan of the facial bones was performed, which revealed no bony injuries. However, there was an unexpected finding of a calcified structure at the site of the left pinna. Upon further examination of the CT scan images, the left pinna was found to be calcified, while the right pinna appeared normal.

Physical examination demonstrated that the left pinna was rigid, thick, mildly contracted, and smaller in size compared to the right pinna (Figures 1 and 2). There was no difference in hearing between the two sides. He did not report any pain or specific symptoms associated with the left pinna.

The individual had a history of working as a market porter, regularly carrying heavy sacks and luggage on his left shoulder to balance them against the left side of his head. This longstanding practice, starting from age 15, caused pressure and compression on the left pinna due to the weight of the sacks. The patient had no known history of diabetes, polyarthritis, hypertension, or other metabolic disorders. He also did not report any previous trauma to the left pinna.

Blood investigations, including serum calcium levels, were within normal limits. Further investigations

regarding any potential endocrine or metabolic disorders were not conducted, as the patient was asymptomatic of the calcified ear and unwilling to undergo additional testing.

Figure 1: Affected left ear.

Figure 2: Normal right ear.

The CT scan revealed radio-opaque shadows in the left pinna region, in contrast to the regular appearance of the right pinna (Figures 3 and 4). The radiological findings demonstrated an ossification pattern of radio-opaque changes within the left pinna, which retained the characteristic shape of the auricular structure. Notably, the earlobe was spared from this calcification process (Figures 5-7).

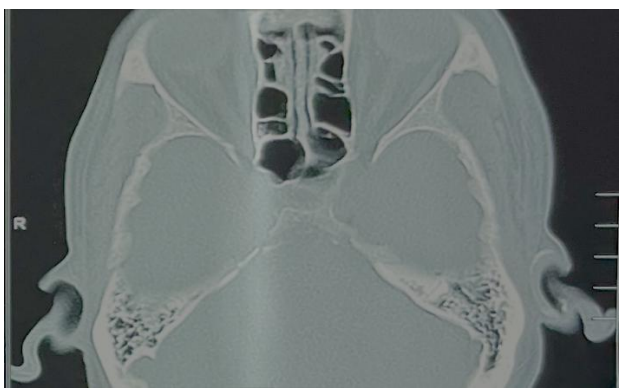

Figure 3: CT scan - cut section.

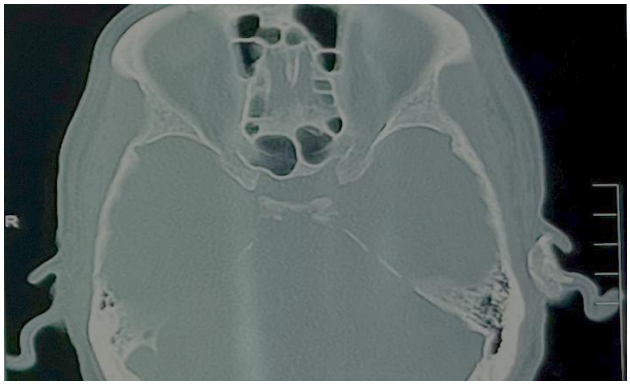

Figure 4: CT scan - cut section.

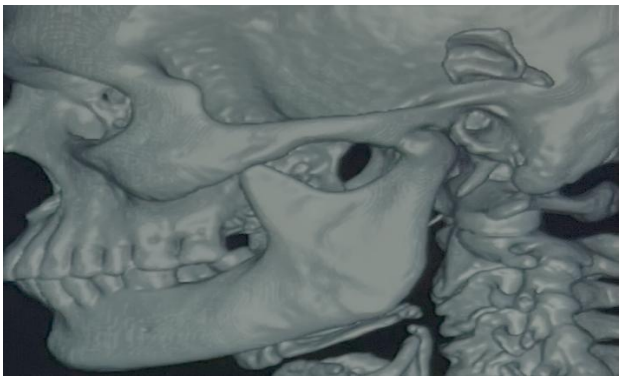

Figure 5: Left ear 3D reconstruction.

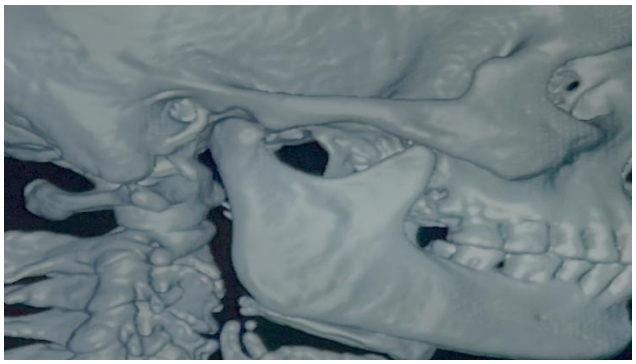

Figure 6: Right ear 3D reconstruction.

Figure 7: Both sides 3D reconstruction.

He was treated for multiple superficial lacerations on his face and extremities and was subsequently discharged. The patient was assured about the calcified ear and instructed to report any pain or other complaints related to the condition.

DISCUSSION

The human pinna, or outer ear, is a uniquely shaped structure composed of elastic cartilage and skin. Its characteristic folds and curves, including the helix, antihelix, tragus, concha and lobule, are not just for aesthetics; they play a vital role in collecting and channelling sound waves into the ear canal, which is essential for sound localisation and resonance.[3] While generally symmetrical on each side of the head, subtle asymmetries especially in the protruding parts of the pinna exist between individuals and can even be used for identification.[3] The pinna's cartilage, being avascular and relying on diffusion for nutrients, heals slowly.[1] Changes in cartilage composition, such as calcification, can significantly reduce the pinna's flexibility, resulting in a rigid and less functional structure.[1]

Reported cases of petrified ear, while relatively rare, appear in the literature with diverse presentations and associated factors.[1,2,4-15] Some cases are reported as an incidental finding during routine examinations, with patients experiencing no noticeable symptoms.9 Few reports link petrified ear associated with systemic conditions such as alkaptonuria, endocrine disorders, or metabolic disturbances.[9,15] Trauma, including frostbite and repeated pressure, has also been identified as a potential cause. One report details a case potentially linked to prolonged exposure to cold.[5] Finally, some cases remain idiopathic, with no apparent underlying cause identified.[1]

The primary clinical feature of petrified ear is the hardening and loss of flexibility of the pinna, making it rigid and immobile.[1] This change is caused by the abnormal deposition of calcium salts or bone formation within the ear cartilage.[1] While often painless, some individuals experience discomfort, particularly when pressure is applied, such as when sleeping.[1] In some cases, the hardened pinna may be smaller or contracted compared to the unaffected ear. Although the condition usually affects the upper part of the pinna, the earlobe is typically spared.[2] Hearing impairment can occur, but it is not a universal symptom.[2] Changes in skin colour or visible external changes are not typically associated with a petrified ear.[2]

Radiological findings in a petrified ear are typically seen in imaging studies like X-rays or CT scans. There is an increased density within the affected ear cartilage, confirming the presence of calcification or ossification. X-rays show hyperdense areas, but CT scans offer more detailed visualization of the extent and distribution of the calcification or ossification.[1,2] Calcification is the deposition of calcium salts in the cartilage, and ossification is the formation of new bone tissue. The CT scan imaging helps to differentiate between calcification and ossification.[2] The earlobe is typically spared in both processes.[2]

Laboratory tests, such as blood tests to measure calcium, phosphorus, and other metabolic markers, are done to identify any underlying systemic conditions.[1,2] Biopsy is not routinely performed to definitively characterize the type of tissue deposition, as clinical assessment and imaging are sufficient for diagnosis and management.[1]

There is no established treatment to reverse a petrified ear. Management primarily focuses on addressing underlying conditions and alleviating discomfort. If pain occurs, especially when pressure is applied to the ear, measures such as using a special orthotic pillow during sleep may help. Although some reports mention surgical interventions like wedge resection or conchal reduction, these are typically reserved for cases where the condition significantly affects quality of life.

CONCLUSION

This case highlights an unusual presentation of acquired petrified ear, likely caused by chronic mechanical pressure. Although the patient experienced no pain or auditory symptoms, the significant calcification of the left pinna emphasizes the possibility that long-term, repetitive trauma can lead to changes in ear cartilage. More research is necessary to understand the mechanisms behind calcification in such cases and to identify potential preventative measures for individuals exposed to similar occupational hazards.

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