

Neuroimaging Highlight

Paraffinoma Induced Hyperostosis Resulting in Blindness and Hearing Loss in a Young Bodybuilder

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We present a unique case of blindness and hearing loss in a 31-year-old previously healthy male bodybuilder. The patient was initially diagnosed with nephrotic syndrome and hypercalcemia following a presentation to the Emergency Department with hypertension, bilateral leg edema, and acute kidney injury. He had no history of any prescription medications. The patient had been using anabolic steroids for 8 years for the purpose of bodybuilding and denied use of any other illicit drugs or injections.

Initial investigations including corrected calcium (3.1 mmol/L), PTH (1.0 pmol/L), and vitamin D levels (205 pmol/L) were in keeping with non-parathyroid hormone (PTH)-mediated hypercalcemia. No causes for the renal failure and hypercalcemia were identified on standard investigations, these further described in a separate previous publication.¹ Following renal function improvement with IV fluids, the patient was discharged on amlodipine for blood pressure management and advised to discontinue all anabolic steroids.

CT thorax completed 6 months later for muscle pain revealed an unusual striated pattern of the pectoralis muscles, which elicited a disclosure of intramuscular paraffin oil injections for cosmetic enhancement (Figure 1). The diagnosis of paraffin-induced granulomatous disease was consequently established, corresponding to a rare known cause of non-PTH-mediated hypercalcemia.² Control of his hypercalcemia with bisphosphonate infusions and glucocorticoids was difficult due to medical treatment noncompliance.

Four years following initial presentation, the patient began experiencing vision and hearing loss. The vision loss deteriorated to finger counting at half a meter distance in both eyes over a

two-month period. Optical coherence tomography assessment revealed significant nerve fiber layer loss, suggestive of bilateral optic nerve injury. The patient's hearing loss was severe to profound, with recorded speech reception thresholds of 55 dB on the right and 80 dB on the left. The hearing loss was partially corrected with hearing aids. A slight right facial nerve weakness was also observed.

CT examinations completed at this time revealed diffuse hyperostosis with notable new coarse intracranial calcifications, most prominent along the inner table of the calvarium and tentorial leaflets (Figure 2) and inner surface of both globes. Calcium deposits were also present along the optic canals and in the internal auditory canals bilaterally, causing marked luminal narrowing and presumably encroachment of the optic nerves and facial/vestibulocochlear nerves (Figure 2). This combination of clinical and imaging findings led to the diagnosis of blindness and hearing loss secondary to hyperostosis.

Paraffin injection use has been reported in a variety of different settings, including muscle enhancement, genital enhancement, and cosmetic rejuvenation.³ Despite being relatively uncommon, local and systemic complications have been documented.⁴ Of the systemic complications, hypercalcemia linked to intramuscular paraffin oil injections has been among the more prominent findings in recent literature.² Notably, diffuse hyperostosis with associated clinical neurological manifestations has yet to be reported. A single case of unilateral blindness following paraffin injection has been described, attributed to embolism.⁵ Hearing loss following paraffin injections has not been reported to our knowledge. Consequently, this case report presents new important complications of paraffin oil injections.

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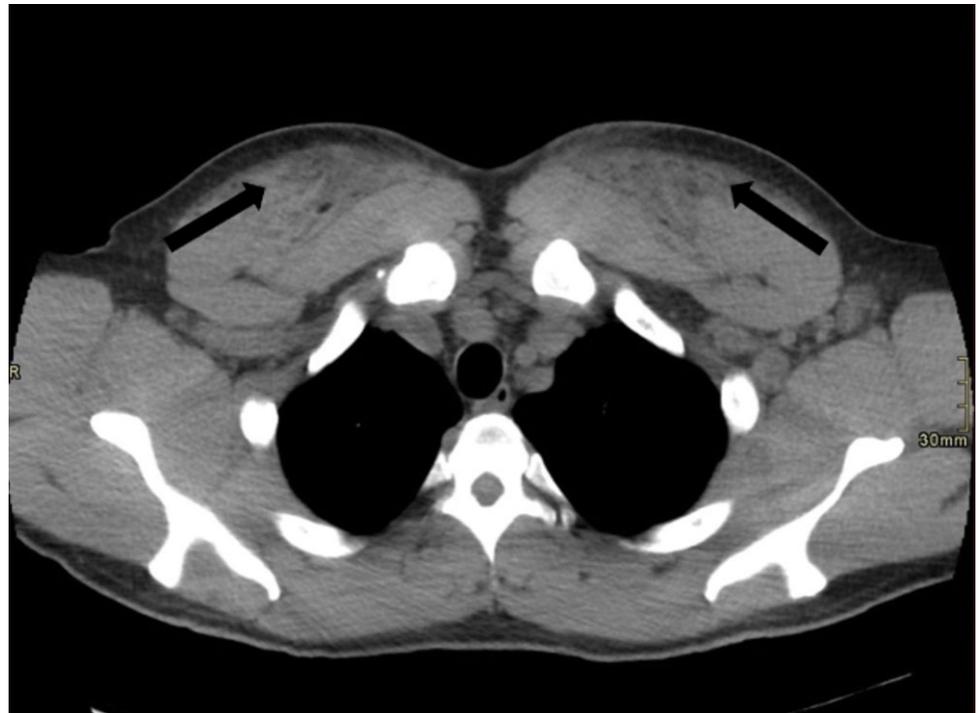


Figure 1: CT thorax demonstrating a striated pattern within enlarged pectoralis muscles along with subcutaneous locules of gas and fat stranding (arrows). Findings are in keeping with paraffinoma at the site of injection.

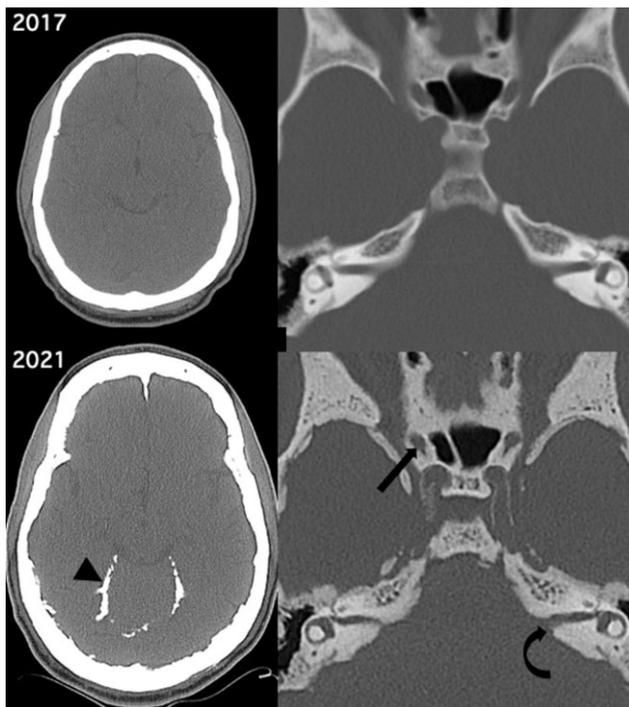


Figure 2: Comparison between CT head from 2017 (top row) and 2021 (bottom row). These show the development of marked intracranial calcifications, most notably involving the tentorial leaflets (arrowhead) as well as the optic canals (straight arrow) and internal auditory canals (curved arrow).

Relevant conflicts of interest. None.

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