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CASE REPORT

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Thorax necrotizing fasciitis following Bezold's abscess

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Abstract

Bezold's abscess is a rare complication of acute otitis media, but it should be recognized and aggressively treated. Otolaryngologists must be aware of this diagnosis, and multidisciplinary care should be provided as soon as possible.

KEYWORDS

Acute otitis media, Bezold's abscess, Necrotizing fasciitis

1 | BACKGROUND

Bezold's abscess is a rare complication of acute otitis media. A homeless man reporting otalgia associated to bulging of the shoulder and right upper limb with drainage of purulent secretion developed necrotizing fasciitis of the shoulder extending to the thorax. Aggressive debridement, broad-spectrum antibiotics, and hyperbaric oxygen therapy were performed.

Acute mastoiditis is a serious complication following acute otitis media. The overall incidence of acute mastoiditis as well as its mortality has decreased from 35% to 5% of cases after implementation of effective antibiotic therapy. Bezold's abscess is an extremely rare complication after an episode of acute mastoiditis.[1] It is observed in cases of erosion of the mastoid tip due to the inflammatory process, spreading to the digastric muscle, submandibular space, and retromaxillary fossa. Cervical muscles and the deep cervical fascia are known as acting barriers against the progressive infection to deeper locations of the neck.[2]

Necrotizing fasciitis is a progressive and destructive infection of superficial tissues with high morbidity and mortality. Necrosis of the superficial tissues is first observed leading to a compromised vascularization of subcutaneous space and muscles.[3] Neck involvement is rare, seen between 1%-10% of cases, and is usually related to odontogenic or oropharyngeal infections.[3] Here, we present a rare complication of acute otitis media evolving to a necrotizing fasciitis to shoulder and thorax.

2 | CASE PRESENTATION

A 67 years old male, alcoholic, smoker, and homeless was admitted to the emergency room reporting otorrhea and otalgia for the last 6 months. Two days before, he noticed bulging of the shoulder and right upper limb associated to drainage of purulent secretion (Figure 1). He was presenting high blood pressure and first laboratory tests revealed acute renal failure and hyperkalemia. Further laboratory tests were inconclusive for infectious or immunosuppressive diseases.

The CT scans of the neck (Figure 2), mastoid (Figure 3A and 3B), and chest (Figure 4) showed areas of hypodensity, at the right side, at the level of the right mastoid tip, at the level of T2-T3, cervical parasternal, parascapular, paravertebral, and lower dorsal level, suggestive of purulent collection. We also observed mediastinal densification without collections and moderate bilateral pleural effusion.

Given the suspicion of acute otitis media complicated by acute mastoiditis and Bezold's abscess, patient was submitted to drainage of the abscess by an incision that extended from the mastoid tip to the shoulder and interscapular area (Figure 5). Cefepime and clindamycin were introduced, which were later escalated to meropenem. The patient developed septic shock, metabolic acidosis, and intermittent unstable sinus tachycardia perioperatively; thus, mastoidectomy was not performed at the same time.

Four days after the first procedure, patient developed necrotizing fasciitis of the shoulder with extension to the chest. He was submitted to surgical debridement of the wound twice during the 35 days that he was kept hospitalized. During first debridement, herpetic lesions were observed on the right upper limb. He was transferred to a negative pressure room, and Acyclovir was also prescribed. Due to prolonged orotracheal intubation, patient was submitted to tracheostomy.

Cultures after the first surgery were positive for *Bacteroides fragilis*, *Acinetobacter baumanni,* and *Acinetobacter calcoaceticus*. Antibiotics were later escalated to Vancomycin-associated meropenem. Despite antibiotic therapy, patient still had fever. Then, cerebrospinal fluid was collected, and it showed glucose consumption, but no bacterial grown was observed. Given the suspicion of contiguous bacterial meningitis, antibiotic treatment was staggered for teicoplanin, with further improvement.

After clinical improvement, patient started hyperbaric oxygen therapy for the wound, and then, he was discharged for follow-up in an outpatient clinic. Seven days after the last session of hyperbaric oxygen therapy, patient was seen by the Plastic Surgery team for skin graft of the scar. Because the otorrhea was still clinically present, a CT scan of the ears was obtained and revealed cholesteatoma of the external auditory canal and a mastoidectomy was further scheduled.

FIGURE 1 Bulging and skin necrosis of the shoulder and right upper limb

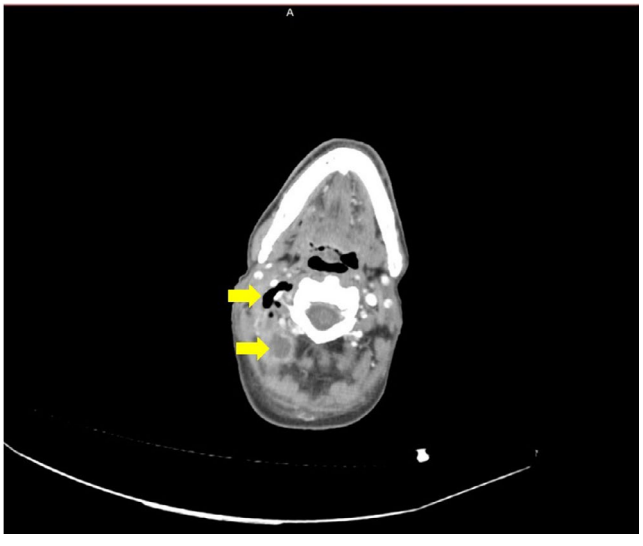

FIGURE 2 A contrast-enhanced axial CT scan demonstrating a rim-enhancing fluid collection inferior to the right mastoid tip, deeper to the sternocleidomastoid muscle (arrow), compatible to Bezold abscess

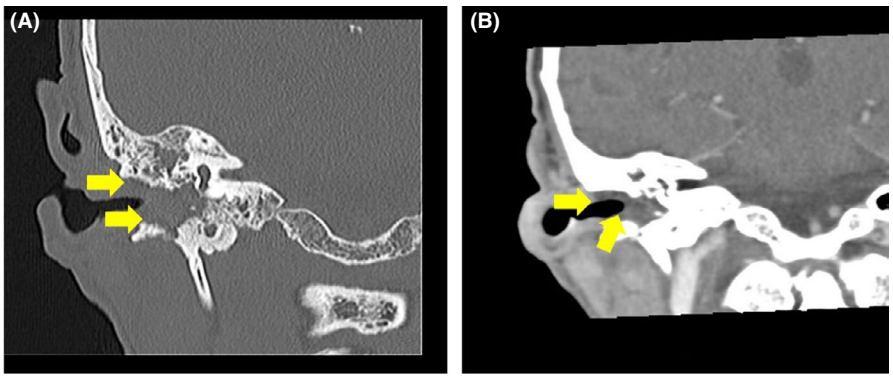

FIGURE 3 A = Coronal CT scan of the mastoid shows erosive bony changes (arrow) extending toward the stylomastoid foramen (arrowhead). Cholesteatoma (asterisks) is seen associated with bony erosion through the inferior posterior external ear canal and mastoid cavity. B = Contrast-enhanced coronal CT scan shows no suspicious malignant tumor in the tympanic cavity and external ear canal (arrow)

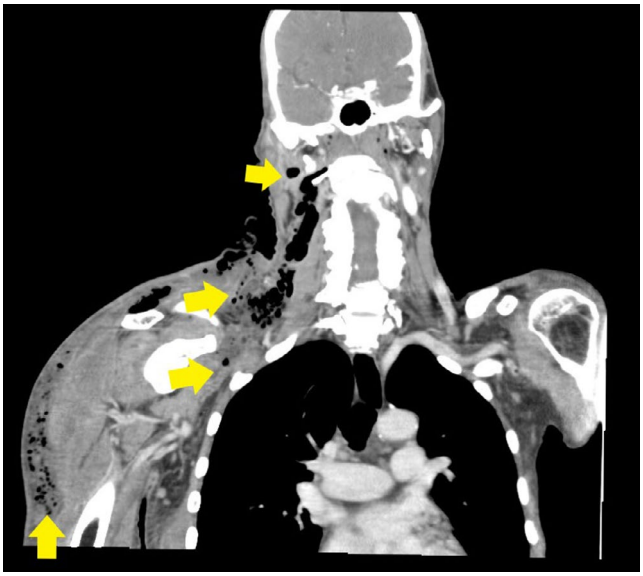

FIGURE 4 Contrast-enhanced coronal CT scan of the neck and thorax shows a multiloculated fluid collection with signs of cavitation (arrows) from the mastoid tip to the chest

FIGURE 5 Patient was submitted to extensive incision from the mastoid tip to the thorax and interscapular area to drain the abscess

3 | DISCUSSION AND CONCLUSION

Bezold's abscess is usually identified in cases with previous mastoidectomy or cholesteatoma.[1] Cervical necrotizing fasciitis is a rare and often fatal condition. It is frequently associated with immunocompromised individuals, such the ones with diabetes mellitus and chronic alcoholism.[4] Aggressive surgical debridement is crucial for good outcomes as it prevents the spread of the disease and inhibits serious complications. Without surgical intervention, fatality rate nearly reaches 100%.[3] Delay to perform surgical debridement longer than 24 hours was also identified as an independent risk factor for death. Healing is done by second intention. Exception is made when suturing is performed to closure exposed cervical vessels, minimizing the risk of a vascular complication.[5]

In addition to surgical treatment, antibiotic therapy is essential, and a broad-spectrum regimen should be adopted for gram-positive, gram-negative, and anaerobic bacteria.[1] Clindamycin is particularly useful as it is an inhibitor of protein synthesis and thus disrupts bacterial exotoxin production.[5] Hyperbaric oxygen therapy is another key point for clinical recovery, since it acts as a bactericide for anaerobic bacteria, induces oxygen free radical formation, assists in neutrophil-mediated bacterial phagocytosis, promotes angiogenesis, enables immune response, and reduces mortality, length of hospitalization, and number of surgical debridements.[3] Sensitivity over 95% and specificity around 75% to 99% have been reported for total body scintigraphy in acute and subacute infection.[6] This examination would be very useful to assess whether or not the treatment was completed.

The present "Case Report" of a homeless man, with history of alcohol abuse and malnutrition, but no evidence of immunodeficiency, reflects that the lack of adequate medical care and antibiotic therapy played an important role for the dramatic outcome following ear infection. Due to mortality rates, Bezold`s abscess should be promptly recognized and aggressively treated.

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Published with written consent of the patient.

CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Dr Vagner Antonio Rodrigues Silva and Dr Amanda Sampaio Almeida: drafted the manuscript. Dr Henrique Furlan Pauna and Dr Joel Lavinsky: drafted the manuscript and revised it critically for important intellectual content, provided final approval of the final draft. Dr Agrício Nubiato Crespo, Dr Carlos Takahiro Chone, and Dr Arthur Menino Castilho: contributed substantially to the study design and approved the final draft.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All patients who are operated on our service sign two terms of responsibility. The first is offered by the "Brazilian Association of Otorhinolaryngology Head and Neck Surgery" which explains the possible risks of the surgical procedure and its benefits. The second authorizes the use of patient data (photographs and / or examinations) for scientific dissemination, but without identifying the patient. Supplementary information Files S1 and S2.

CONSENT FOR PUBLICATION

Supplementary information File S3.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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