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Bezold's Abscess and Internal Jugular Vein Thrombosis Extending to the Sigmoid Sinus: Unusual Complications of Cholesteatoma

EL YOUBI Hajar[1]*, EL ALAOUI EL RHOUL Salma[1], Ridal Mohamed[1], BENMANSOUR Najib[1], OUTTASSI Naouar[1], AFELLAH Mohamed[1], OUDIDI Abdelatif[1]

[1]Department of Otolaryngology – Head and Neck Surgery, CHU Hassan II Fes – Morocco, Faculty of Medicine and Pharmacy of Fes – Morocco

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***Corresponding author:** Dr. EL YOUBI Hajar
Resident Doctor in ENT, Head and Neck Surgery, CHU Hassan II Fes – Morocco, Faculty of Medicine and Pharmacy of Fes – Morocco

Abstract **Clinical Case**

Bezold's abscess is a rare suppurative complication of mastoiditis arising from chronic otitis media. It is a cervical abscess that spreads from the mastoid insertions of the sternocleidomastoid and digastric muscles due to erosion of the bony cortex at the mastoid tip. Management is both medical and surgical. Since the introduction of antibiotics, the number of reported cases of Bezold's abscess has significantly decreased. We report the case of a 29-year-old patient followed for chronic cholesteatomatous otitis media who presented with an inflammatory right lateral cervical mass. Cervical CT revealed a deep cervical abscess associated with right-sided internal jugular vein and sigmoid sinus thrombosis. We describe the clinical features, diagnostic work-up, and therapeutic management of this rare case.

Keywords: cholesteatoma, Bezold's abscess, sinus thrombosis, antibiotic therapy, drainage.

INTRODUCTION

Bezold's abscess is a rare but potentially life-threatening complication of acute or chronic mastoiditis. It results from the medial erosion of the mastoid tip, allowing purulent material to spread into the deep cervical spaces, particularly beneath the insertion of the sternocleidomastoid muscle. First described in 1881 by Friedrich Bezold, this deep neck infection has become increasingly uncommon in the antibiotic era. Early recognition and prompt medical-surgical management are essential to prevent severe complications such as venous thrombosis, mediastinitis, or intracranial extension.

CLINICAL CASE

Patient Presentation:

A 29-year-old male with a history of recurrent suppurative otitis presented with a painful right cervical mass evolving in a febrile context for seven days. Symptoms had begun four weeks before admission, with left purulent otorrhea and hypoacusis, without tinnitus or vertigo.

Clinical Findings:

General examination revealed a patient in fair general condition, with well-colored conjunctivae, a temperature of 39°C, and stable vital signs. ENT examination found a painful, firm right lateral cervical mass approximately 6 cm in size, with overlying inflammatory skin (Figure 1), associated with bilateral jugulocarotid and submandibular lymphadenopathies and severe trismus.

Left otoscopy revealed purulent otorrhea with inflammatory stenosis of the external auditory canal. The right ear otoscopy was unremarkable. Examination of the oral cavity and oropharynx showed severe trismus with 1 cm mouth opening. Neurological exam was normal. The remainder of the examination was unremarkable.

Diagnostic Approach:

- Biological findings showed leukocytosis (15,000/µL) with neutrophil predominance, C-reactive protein at 150 mg/L, normal fasting glucose, and negative HIV serology.
- Cervical CT revealed a right deep cervical fluid collection posterior to the sternocleidomastoid muscle (5 cm x 3 cm) with thickened walls and peripheral enhancement post-contrast. Surrounding fat and adjacent soft tissues, including the medial pterygoid muscle, were infiltrated. Total thrombosis of the ipsilateral internal jugular vein extending to the sigmoid sinus was noted. Bilateral reactive-appearing jugulocarotid lymph nodes were more prominent on the right.

- Temporal bone CT showed hypodense filling of the tympanic cavity and mastoid air cells with mild erosion of the head of the malleus, suggestive of cholesteatoma.

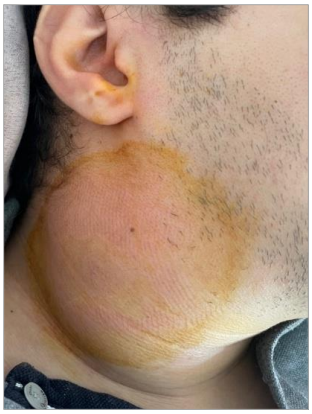

Figure 1: Image showing the right lateral cervical swelling related to Bezold's abscess

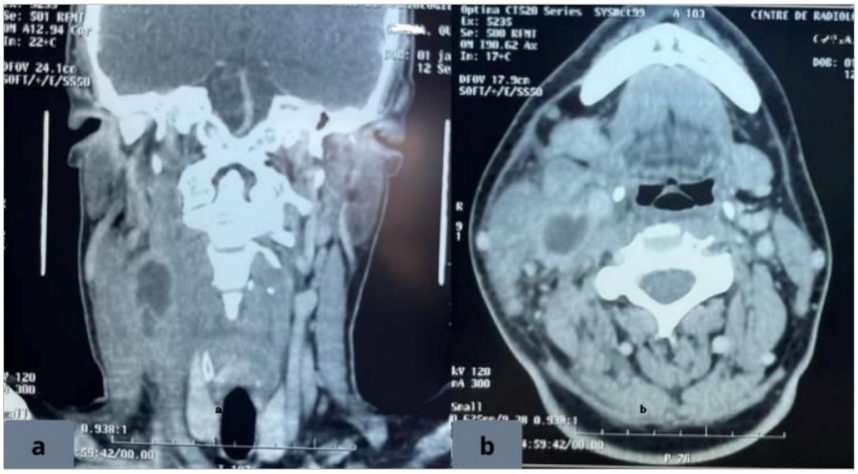

Figure 2: CT scan slices showing Bezold's abscess. a - Coronal view. b - Axial view.

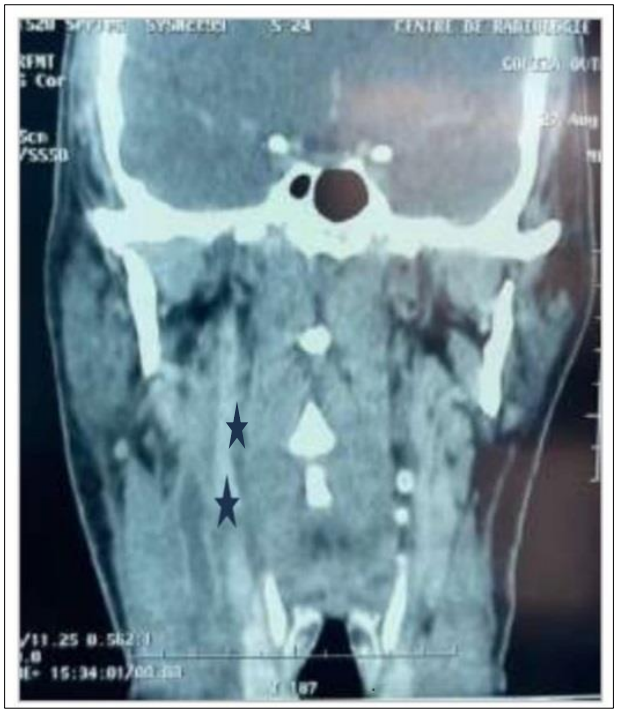

Figure 3: Coronal CT scan section showing internal jugular vein thrombosis

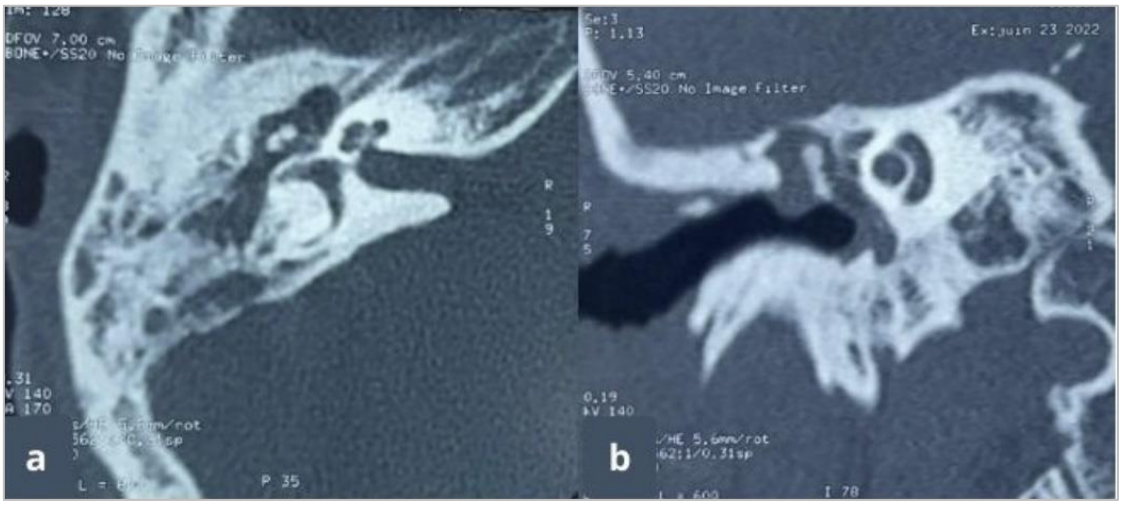

Figure 4: CT scan section of the petrous bone showing the cholesteatoma. a - Axial view. b - Coronal view.

Therapeutic Intervention:

Emergency medical-surgical treatment was initiated with IV broad-spectrum antibiotics (ceftriaxone and metronidazole), subcutaneous low molecular weight heparin (LMWH) in two daily injections, and ultrasound-guided needle aspiration that drained 20 cc of pus.

Cytobacteriological analysis: identified *Streptococcus pneumoniae*.

Follow up and Outcomes:

Clinical and biological improvement followed, with significant regression of the cervical swelling. The patient underwent petromastoidectomy 4 weeks later to excise the cholesteatoma and re-aerate the mastoid air cells.

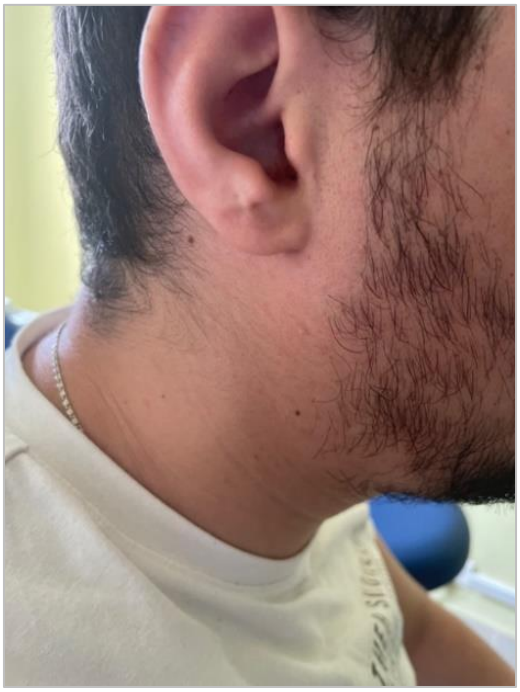

Figure 5: Image demonstrating significant regression of the right lateral cervical swelling after treatment

DISCUSSION

Initially described by Friedrich Bezold in 1881, Bezold's abscess is a rare but serious complication of coalescent mastoiditis. It develops when an otogenic infection erodes the medial cortex of the mastoid bone, allowing the infection to extend beneath the insertion of the sternocleidomastoid muscle [1] into the deep cervical tissues. The infection may spread to the infratemporal fossa and through the deep cervical fascia, potentially involving the carotid sheath and leading to internal jugular vein thrombosis [1].

Progressive pneumatization of the mastoid bone with age is a major predisposing factor, explaining the rarity of this complication in children [2]. *Streptococcus pneumoniae* is the most frequently identified pathogen [2]. Since the advent of antibiotics, the incidence of Bezold's abscess has significantly declined [1].

From a diagnostic perspective, the coexistence of chronic otitis media and a posterior cervical mass should suggest Bezold's abscess [2]. Contrast-enhanced CT is the first-line imaging modality for assessing the local extent of the abscess [3]. MRI can complement the evaluation by identifying potential intracranial complications such as encephalitis, cerebral abscesses, or venous and arterial infarctions [3].

The disease course may be complicated by serious conditions such as sigmoid sinus thrombophlebitis [4], cerebral venous thrombosis (CVT), meningitis, or mediastinitis in cases of uncontrolled spread [1]. Factors promoting dissemination include microbial virulence, delayed treatment, and comorbidities such as diabetes and HIV infection [2]. Furthermore, the presence of a cholesteatoma or a history of mastoidectomy may predispose to cervical extension due to cortical bone breach [5].

Management is both medical and surgical and must be initiated urgently. It includes surgical drainage of the cervical collection, empiric antibiotics adjusted according to culture results, and petromastoidectomy in the case of cholesteatoma [6]. The use of anticoagulation in infectious CVT in children remains debated, but most case series and guidelines support its benefit [3].

Finally, the treatment of dural sinus thrombosis (DST) primarily involves managing the underlying infection with broad-spectrum antibiotics, anticonvulsants, anticoagulation, and in some cases, surgical drainage, thrombectomy, or internal jugular vein ligation [7].

CONCLUSION

Untreated or poorly managed chronic otitis media can lead to serious complications such as Bezold's abscess. Any lateral cervical mass in the context of otitis should prompt consideration of this diagnosis. Urgent multidisciplinary management is essential to prevent life-threatening complications such as mediastinitis.

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