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Case Report

Luc's abscess masquerading as severe otitis externa

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A R T I C L E I N F O

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A B S T R A C T

Luc's abscess is an unusual complication of otitis media. We report a 12-year old boy who presented with severe otitis externa, complicated by a Luc's abscess. He underwent incision and drainage of the abscess without mastoidectomy, followed by 6-weeks of culture-directed antibiotic therapy, and recovered well. This case suggests that Luc's abscess may present as severe otitis externa. It also supports the current literature, that the need for a mastoidectomy may be judged on a case by case basis.

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1. Introduction

Luc's abscess, first described in 1913 [1], is defined as a purulent collection deep to the temporalis muscle secondary to acute otitis media. Acute otitis media (AOM) is a common disease in the paediatric population. In the USA, 8.7 million diagnoses of AOM are made every year [2]. In Asia, the prevalence of otitis media in school-age children varies between 3.25% (Thailand) and 12.23% (Philippines) [3]. The complications of AOM are summarized in Fig. 1. Of these, mastoiditis remains the most common suppurative complication of AOM. In the UK, mastoiditis occurs in 1.1/1000 cases of AOM [4]. Extratemporal complications include Bezold's abscess, Citelli's abscess and rarely, Luc's abscess. Admissions for severe complications of AOM are uncommon in our institution, the largest tertiary paediatric hospital in Singapore. This may be due to easy access to primary healthcare in Singapore and the appropriate use of antibiotics in treating early disease. We present a case of Luc's abscess associated with severe otitis externa and discuss the pathophysiology and the management options of this rare condition.

2. Case history

A 12-year old Chinese boy presented to our hospital with a 6-day history of left temporal headache, left ear pain and fever, not improving with oral antibiotics. His medical history included a previous adenotonsillectomy performed 7 years ago for sleep-disordered breathing.

On examination, he had a fever of 39.7 Degrees Celsius and a diffuse left temporal swelling that was moderately tender to palpation. The left external ear canal was oedematous (Fig. 2) and there were bilateral serous middle ear effusions. His left tympanic membrane was not red or bulging. He also suffered severe trismus. The facial nerve was intact and there was no swelling, tenderness or erythema of the mastoid process. A computed tomography of the brain and temporal bone was performed which revealed opacification of bilateral mastoid air cells, left external auditory canal oedema and a left temporal abscess with osteomyelitis of the temporal bone (Fig. 3 and Fig. 4). Of note, the left zygoma was partially pneumatized with a breach in the lateral aspect (Fig. 5). There was no evidence of coalescent mastoiditis or intracranial abscess. He was admitted and started on empirical broad-spectrum intravenous antibiotics (Amoxicillin, clavulanic acid).

He underwent incision and drainage of the left temporal abscess. Intra-operatively, aspiration was done with an 18-gauge needle to positively identify the location of the pus. A small incision (Fig. 6) was then made in the supra-auricular region, 1 cm above the helical crease. The incision was deepened to the subperiosteal plane and a freer elevator was pushed forwards along the bone in the direction of the previously located pus collection. This yielded 3 mL of frank pus, which was sent for bacterial culture. A myringotomy and tube insertion had been planned for the left ear in the same sitting, however the ear canal was too oedematous, and the procedure was not performed. As he had no symptoms or signs

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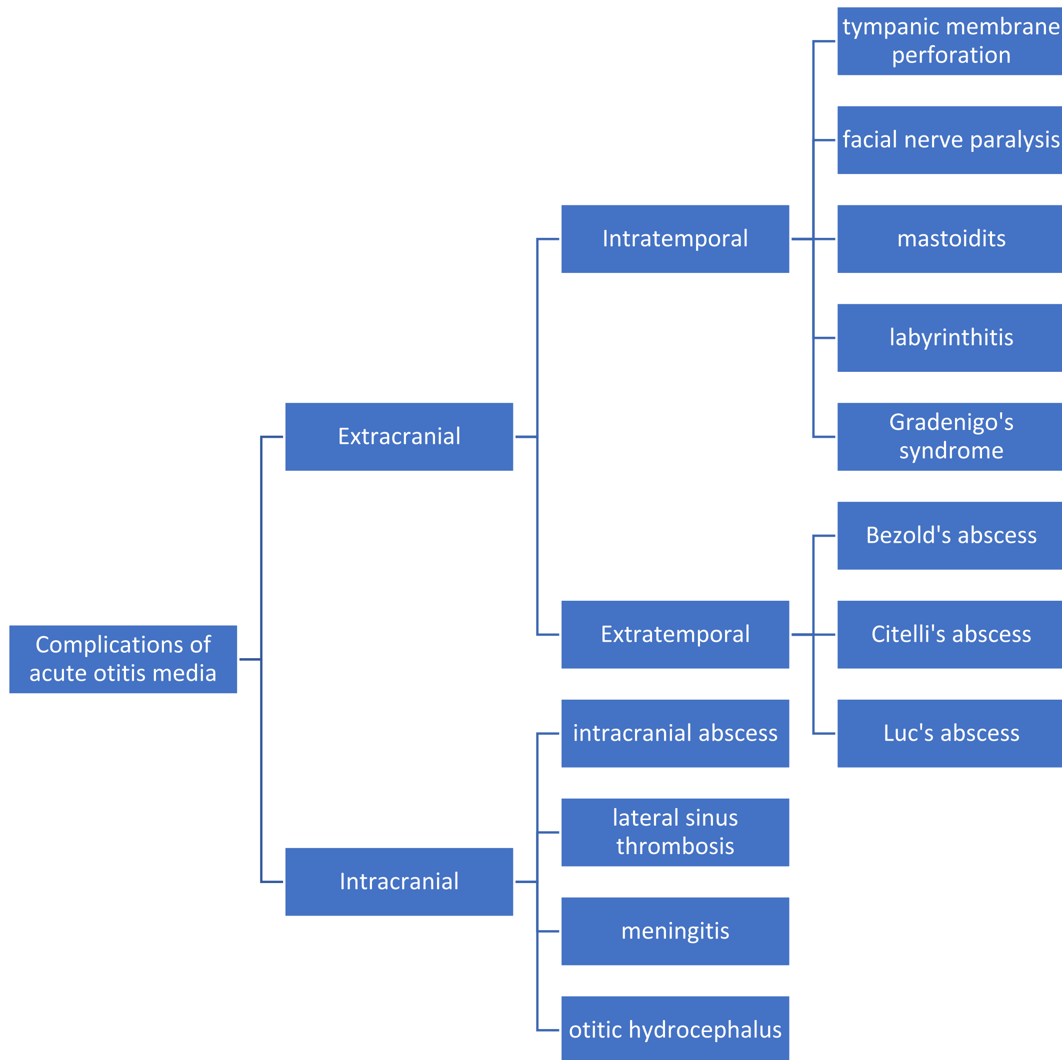

Fig. 1. Complications of acute otitis media.

of acute mastoiditis, mastoidectomy was not performed. Following surgery, his fever subsided within 24 hours. Bacterial cultures of the pus grew Streptococcus Intermedius which was pan-sensitive to antibiotics. He was treated with intravenous Amoxicillin, clavulanic acid for a week and this was converted to its oral form for a total course of 6 weeks in view of the presence of osteomyelitis. His ear canal swelling resolved within a week and he subsequently made a full recovery without the need for further surgery. At 3 months follow up, he was well with no further ear complaints. His bilateral middle ear effusions were also noted to have resolved.

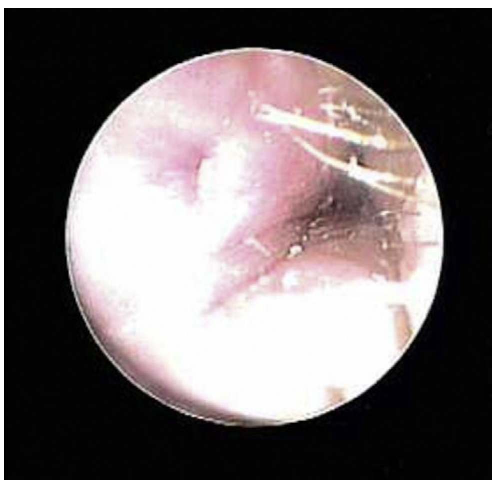

Fig. 2. Left oedematous ear canal.

3. Discussion

Henri Luc first described the subperiosteal temporal abscess as a complication of AOM in 1913 [1]. The pathophysiology was attributed to infection from the middle ear spreading via the notch of Rivinus and deep auricular artery to the subperiosteal space in the external ear canal, leading to an abscess deep to the temporalis muscle. During Luc's era, there were no imaging modalities available. When Luc performed a cortical mastoidectomy on these patients, they revealed no mastoid pathology. Following his hypothesis that a mastoidectomy was unnecessary, Luc went on to treat these abscesses with an incision and drainage without a mastoidectomy and without the use of antibiotics. Knappe and Gregor supported Luc's theory of infectious spread by presenting a 15-year-old girl with a subperiosteal temporal abscess of otitic

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