Luc's Abscess: A reminder of a potential complication of otitis media

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ABSTRACT

Otitis media is still a common infection and can be associated with complications if not treated early. We report the case of an elderly gentleman who presented with an abscess deep to the temporalis muscle 'Luc's abscess', as a complication of otitis media. Henry Luc first described this condition a century ago and in the antibiotic era, such manifestation is now rarely seen. We report the case of a 73-year-old man diagnosed with Luc's abscess who presented with a week's history of right temporal swelling that was associated with fever, right ear pain and progressive hearing impairment. This case report is a reminder to clinicians of this rare but treatable complication of a very common disease in the community.

Keywords: Abscess, otitis media, complications, mastoiditis

INTRODUCTION

In the early 20th century, Henry Luc, a French clinician described a subperiosteal abscess located deep to the temporalis muscle as a complication of acute otitis media in a nine-year-old girl. [1] In the post-antibiotic era, Luc's abscess is now rarely encountered. Although there are still sporadic cases reported in the literature, clinicians in particularly primary care doctors/general practitioners may not be aware of this complication. Unfamiliarity with the potential complications of otitis media can lead to delay of proper treatment with potential harm to the patient. We report the case of a Luc's abscess and hope this case will serve as a reminder to clinicians that this condition still exists.

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CASE REPORT

A 73-year-old man, with background history of diabetes mellitus, presented with right temporal swelling for the previous week. The patient reported history of fever, right ear pain and progressive hearing impairment, but denied ear discharge, headache, or vertigo.

Fig. 1: a) An angled lateral view of a swelling at the right temporal (masticatory) space (indicated by dotted line), and b) anterior view showing the sweling.

He had a history of recurrent right ear infection in the past, but denied having any active ear discharge at presentation. A week prior to this episode, he had symptoms of influenza and was treated successfully by a general practitioner with paracetamol and antihistamines.

Physical examination showed a non-erythematous, tender 3cm swelling on the right temporal region, around the zygomatic root (Figures 1a and b). Otoscopic examination of the right ear showed the ear drum to be retracted, with evidence of fluid in the middle ear. Blood investigations revealed leukocytosis (15,770/mm^3) (range, 4,000 to 12,000/mm^3) with neutrophilia (73.5%), mild thrombocytosis (371,000/mm^3) (150,000 to 450,000/mm^3) and elevated random blood sugar of 13.7 mmol/L (4.5 to 7.2). Pure tone audiogram showed moderate to severe mixed hearing loss on the right side, with moderate sensorineural loss on the left side. Computed tomography (CT) scans of the temporal bone, demonstrated an opacification of pneumatic cells of the right mastoid and middle ear, with a bony defect at the antero-superior x mastoid cortex, next to the root of the zygoma (Figures 2a and b). There was also a collection in the soft tissues at the squamous part of the temporal bone, deep to the temporalis muscle.

The patient underwent incision and drainage of the abscess and a cortical mastoidectomy. Intra-operative findings revealed a collection of pus in the sub-periosteal space above the root of the zygoma, at the tympa–

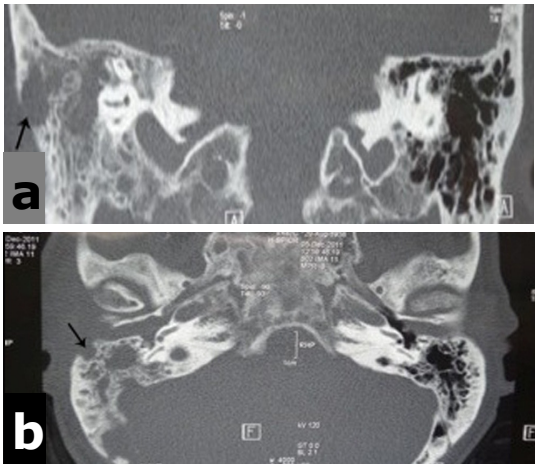

Fig. 2. a) CT scans (coronal view), and b) axial view showing loss of normal opacification and diffusely eroded mastoid septation on the right compared to the left side, indicating coalescent disease, with a defect in the external mastoid cortex (arrow).

nosquamous plate deep underneath the temporalis muscle. There was a communication with the mastoid through a breach in the external cortex of the bone. The mastoid air cells were filled with debris and granulation tissue especially at the superior part near the tegmen tympani and the middle ear cavity. No cholesteatoma sac was seen in the mastoid. The findings were consistent with a Luc's abscess. Culture from the abscess isolated *Klebsiella ozaenae*. The patient was treated with a seven day course of intravenous amoxycyclin-clavulanic acid 1.2gm three times a day. Post-operative recovery was uneventful and the patient was discharged on the seventh day post-operation. Follow-up at two months showed complete regression of the Luc's abscess and a dry right ear.

DISCUSSION

Otitis media is a common disease and most patients are treated by their primary care doctors without the need for hospital admissions. Suppurative complications of otitis media are rare and are usually associated with reduced or compromised immune status such as very young age, underlying diabetes mellitus and immune compromising infections such as the Human Immune Deficiency Virus (HIV). However, there are some indications that the incidence of otogenic abscess is on the rise, with much of it explained by the increase in antibiotic resistant organisms. [2, 3] Hence, the incidence of rare complications such as Luc's abscess is anticipated to be on the rise.

Among suppurative complications of otitis media, mastoiditis, subperiosteal mastoid abscess and sigmoid vein thrombosis are reportedly the most common. [3] Luc's abscess is a collection of pus in the subperiosteal plane deep to the temporalis muscle. The pus originates from the intraosseous suppuration in the mastoid, secondary to the middle ear infection. The infection spreads through the subperiosteal extraosseous plane via either natural or unnatural openings in the cortical bone. In our case, the CT scan showed erosion in the antero-superior mastoid cortex and this was the most likely communication point between the mastoid and the subperiosteal temporal fossa. The cortical erosion was probably secondary to the osteitis and demineralisation of the bone from chronic otitis media.

In paediatric patients, it has been suggested that the route of spread is direct from the middle ear to the subperiosteal plane of the roof of the ear canal and to the subtemporal area and not via the mastoid. [4-6] In these paediatric cases, the authors did not find much mastoid pathology during surgery, and hence, they suggested minimal surgical intervention is required in the mastoid in cases of Luc's abscess. However, in our case we performed a cortical mastoidectomy and this showed a significant reservoir of infection in the cavity, consistent with the preoperative CT imaging findings.

The presentation of Luc's abscess is associated with anatomic variations that allow pus collection deep to the temporalis muscle within the subperiosteal plane. Other anatomical variants or deformity may lead to the spread of pus from the mastoid cavity to the root of the zygomatic arch, [7] the medial surface of the sternomastoid muscle at the mid part of the neck (Bezold's abscess) [8] or to the posterior belly of the digastric muscle. [9] Knowledge and awareness of the temporal

bone anatomy are essential to diagnosing these otogenic abscesses.

In developed country, subperiosteal abscesses are usually reported as complications of acute otitis media. On the other hand, in developing or less developed nations, Luc's abscess are often associated with chronic otitis media. One study reported that most of the subperiosteal mastoid abscesses encountered in developing countries developed from chronic otitis media in association with cholesteatoma. [10] Luc's abscess often present with moderate signs of infection or inflammation (otalgia, temporomandibular pain, fever, tender fluctuation, ipsilateral cervical lymphadenopathy, leucocytosis and thrombocytosis). Most patients have little or no systemic signs.

The management of Luc's abscess include use of systemic and local antibiotic therapy and local surgical drainage guided by CT scan imaging findings. Abscess deep to the temporalis muscle should be externally addressed with incision and drainage, and a mastoidectomy may be indicated depending on the CT scan imaging findings. CT imaging is important in evaluating the extent of the disease. [4]

In conclusion, we report a case of Luc's abscess secondary to chronic otitis media as a reminder to clinicians of this condition. With the introduction of antimicrobial, Luc's abscess has been uncommon and awareness is essential for early diagnosis. Imaging with CT is helpful to evaluate the extent of the abscess and to guide management.

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