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## Facial nerve palsy as a complication of an acute otitis media

### Porażenie nerwu twarzowego jako powikłanie ostrego zapalenia ucha środkowego

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#### Abstract

Acute otitis media is an infection of abrupt onset that occurs in the middle ear. It usually presents with ear pain. In young children, common presentations include fever, reduced oral intake, ear discharge, irritability and poor sleep. We describe a rare case of acute otitis media presenting with facial nerve palsy without any ear symptoms that resolved after myringotomy and grommet insertion.

**Keywords:** acute otitis media, facial nerve palsy, myringotomy, grommet insertion

#### Streszczenie

Ostre zapalenie ucha środkowego to infekcja o nagłym początku, która obejmuje struktury ucha środkowego i najczęściej objawia się bólem ucha. Częste objawy u małych dzieci to gorączka, brak apetytu, obecność wydzieliny z ucha, drażliwość i zaburzenia snu. W pracy opisano rzadki przypadek zapalenia ucha środkowego objawiającego się porażeniem nerwu twarzowego bez objawów usznych, które ustąpiło po myringotomii i założeniu drenu wentylacyjnego.

**Słowa kluczowe:** ostre zapalenie ucha środkowego, porażenie nerwu twarzowego, myringotomia, założenie drenu wentylacyjnego

## INTRODUCTION

**A**cute otitis media (AOM) is one of the most frequent diseases in early infancy and childhood. It is defined as the presence of middle ear effusion as well as a rapid onset of signs and symptoms of middle ear inflammation, such as ear pain, otorrhea or fever<sup>(1)</sup>. It is most prevalent among children aged 3 months to 3 years with the peak incidence between 6 and 18 months of age<sup>(2)</sup>. Approximately 10% of children will experience an episode of AOM by 3 months of age while approximately 50% to 85% of all children have experienced at least one AOM episode<sup>(1)</sup>.

Facial nerve palsy is a known uncommon complication of AOM. In the pre-antibiotic era, it occurred in 0.6% of patients with acute suppurative otitis media and 2.3% of those with chronic suppurative otitis media, and it is rarely encountered nowadays<sup>(3)</sup>. Common symptoms of facial nerve palsy include unilateral facial weakness without sparing of the forehead, facial numbness, drooling of saliva, disturbed taste and dry eyes. The aetiology of facial nerve palsy in children varies and it was found that 84% of children had facial nerve palsy due to specific causes such as injuries (24%), otitis media (16%), infections (12%), neoplasia (12%) and congenital anomalies (8%), while 16% had Bell's palsy as a diagnosis of exclusion<sup>(2)</sup>.



Fig. 1. Grade IV facial nerve palsy during admission (arrow)

## CASE REPORT

A one-year-old girl referred from a peripheral health clinic presented with right facial asymmetry for 2-day duration (Fig. 1). It was sudden in onset. There was no otorrhea. Further questioning revealed that she developed fever 4 days earlier, but it resolved spontaneously and the patient presented only with rhinitis and cough on the day of admission. On examination, the child was alert and active. There was right facial nerve House–Brackmann grade IV palsy. Otoscopy revealed a dull right tympanic membrane, but it was not bulging. No mastoid tenderness, sagging of the posterior wall of the ear canal or tympanic membrane perforation seen.

The girl was diagnosed with right facial nerve palsy secondary to acute otitis media. She was admitted for intravenous amoxicillin–clavulanic acid 250 mg thrice daily, oxymetazoline nasal spray 0.025% 2 puffs twice daily, syrup desloratadine 1.25 mg once daily and artificial eye drop 2 drops 4 times daily for three days. After three days of treatment, there was still no improvement of facial nerve palsy and a minimal bulging of the right tympanic membrane. She then underwent myringotomy and grommet insertion. Intraoperatively, there was mucoid secretion coming out upon myringotomy. Her condition gradually improved after operation and her right facial nerve palsy completely resolved one week later (Fig. 2).

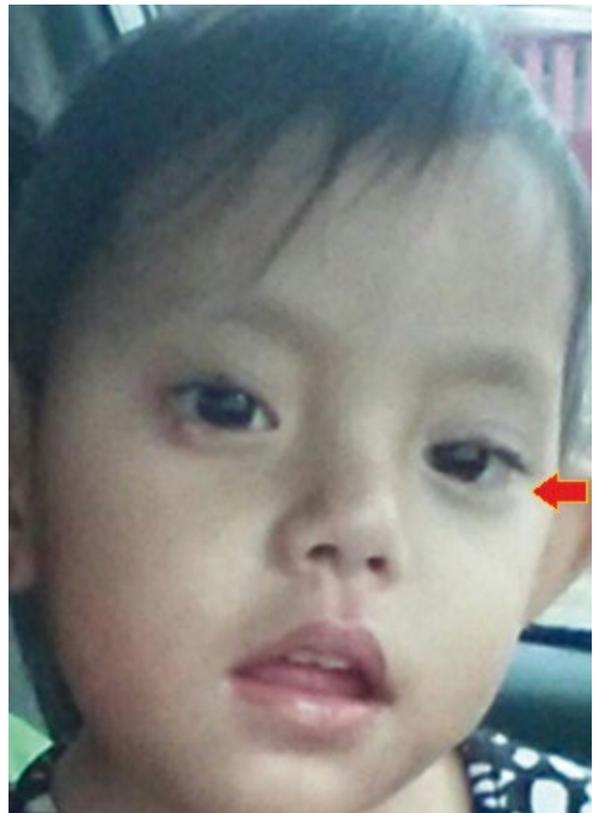


Fig. 2. Complete recovery of facial nerve palsy one week after surgical intervention

## DISCUSSION

Facial nerve palsy in paediatric patients may be either congenital or acquired. Acquired facial nerve palsy is mostly due to infectious, traumatic, iatrogenic, neoplastic and idiopathic causes. Common infectious causes of paediatric facial nerve palsy include otitis media, Lyme disease and varicella zoster virus infection<sup>(3)</sup>.

This case demonstrates the successful management of facial nerve palsy secondary to acute suppurative otitis media managed with surgical intervention. Acute suppurative otitis media is an acute inflammation of the middle ear following infection by a pyogenic organism. It is common in infants and children. Typically the disease follows viral upper respiratory tract infection, but soon the pyogenic organisms ascend through the Eustachian tube to involve the middle ear.

Little is known of the aetiology of facial nerve paralysis in AOM. Various pathophysiological mechanisms have been hypothesised to be involved in the genesis of this complication. In the early stages of the disease, facial nerve palsy can be explained by a retrograde infection within the facial nerve bony canal or a retrograde infection within the tympanic cavity ascending the chorda tympani to the facial nerve, reactivation of latent virus infection caused by middle ear suppuration<sup>(4)</sup>, acute neuritis with venous thrombosis leading to inflammatory oedema of the nerve, and demyelination of the facial nerve secondary to the presence of bacterial toxins.

When facial palsy appears late in the course of the disease, it seems to be caused by direct extension of middle ear inflammation to the facial nerve bony canal and poor vascular perfusion caused by inflammation<sup>(5)</sup>. Facial nerve palsy following secretory otitis media has been reported, suggesting that it may be a result of pressure on the dehiscence nerve by middle ear fluid, especially the horizontal portion of the facial nerve<sup>(6)</sup>. Kvestad et al. reported that the rate of sequelae described in patients with peripheral facial nerve paralysis secondary to otitis media varies from 0% to 30%<sup>(acc. to 7)</sup>. The prevalence of fallopian canal dehiscence is 25%<sup>(8)</sup>, while Moreano et al. reported the prevalence for children over and under the age of 2 years to be 56% and 81%, respectively<sup>(9)</sup>. The dehiscence may play an important role in the development of facial nerve palsy in association with acute otitis media. This case adds to the literature by proving successful management of facial nerve palsy following acute suppurative otitis media.

In cases of facial nerve palsy following acute suppurative otitis media with intact tympanic membrane, myringotomy and grommet insertion play an important role together with antibiotic, nasal decongestant and antihistamine in hastening the recovery. Most authors suggested that we should offer aggressive antimicrobial therapy and myringotomy with or without tube insertion in the management of facial nerve paralysis in AOM<sup>(4)</sup>. According to revised clinical practice guidelines for otitis media with effusion (OME) and AOM 2004, when suppurative complication is suspected or present, insertion of a tympanostomy tube at the time of tympanocentesis or myringotomy can provide more prolonged drainage and aeration of the middle ear and mastoid<sup>(10)</sup>.

### Conflict of interest

*The authors do not declare any financial or personal links with other persons or organisations that might adversely affect the content of the publication or claim any right to the publication.*

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