© Pediatr Med Rodz 2021, 17 (1), p. 80–83
DOI: 10.15557/PiMR.2021.0014

Received: 02.08.2019
Accepted: 19.11.2020
Published: 05.03.2021

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Epiglottic abscess as a rare cause of muffled voice

Ropień nagłośni – rzadka przyczyna stłumienia głosu

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Abstract

A 42-year-old male presented with fever and symptoms of impending upper airway obstruction on the day of presentation. He required immediate intubation due to swollen epiglottis. The condition responded to antibiotic and steroids, and he was able to be extubated after 3 days. Two days later, however, the epiglottis started to swell up again, this time with pus discharge. Emergency exploration and drainage of the epiglottic abscess were executed, and the patient was kept intubated for a few days afterwards for the swollen epiglottis to reduce in size. Daily flexible laryngoscopy was commenced to monitor the disease status. After completing the antibiotic therapy the patient was discharged in good general condition.

Keywords: acute epiglottitis, abscess, adult, airway obstruction

Streszczenie

Czterdziestodwuletni mężczyzna zgłosił się z gorączką i objawami wskazującymi na stan zagrażający niedrożnością górnych dróg oddechowych. Pacjent wymagał niezwłocznej intubacji ze względu na obrzęk nagłośni. Odnotowano dobrą odpowiedź na wdrożony antybiotyk i lek steroidowy. Po trzech dniach pacjenta ekstubowano. Jednak po upływie kolejnych dwóch dni ponownie stwierdzono narastający obrzęk nagłośni, tym razem z towarzyszącą mu ropną wydzieliną. Ze wskazań nagłych wykonano zabieg eksploracyjny wraz z drenażem ropnia nagłośni. Pacjent pozostał zaintubowany przez kolejne kilka dni aż do zmniejszenia obrzęku. W celu monitorowania stanu chorego wprowadzono codzienne badanie giętkim endoskopem laryngologicznym. Po zakończeniu antybiotykoterapii chory został wypisany do domu w stanie ogólnym dobrym.

Słowa kluczowe: ostre zapalenie nagłośni, ropień, dorosły, niedrożność dróg oddechowych

INTRODUCTION

Epiglottic abscess is a rare sequela of acute epiglottitis, occurring almost exclusively in adults[1,2]. It can lead to asphyxial death from abscess rupture[3]. Airway management must be the top priority, accompanied by antibiotics and anti-inflammatory drugs. Anticipation of abscess complication and possible rupture causing airway obstruction is done by daily flexible nasopharyngolaryngoscopy (FNPLS). Although computed tomography (CT) of the neck is not indicated in acute epiglottitis, the persistence or recurrence of the lesion may indicate abscess formation or another underlying pathology.

CASE PRESENTATION

A 42-year-old man with underlying diabetes mellitus presented to the Emergency Department with high-grade fever, cough, and sore throat of 2 days' duration. He also had odynophagia, voice change, and shortness of breath on the day of admission. Clinically, his temperature was 38°C, with audible inspiratory stridor and hoarseness. His highest oxygenation level was only 93% under high flow mask and he was struggling to breathe. The oropharyngeal examination was normal. Lateral neck radiography demonstrated a positive thumb sign. The clinical diagnosis of acute epiglottitis was made. In view of impending upper airway obstruction, he was rushed to the operating theatre (OT) for awake fibreoptic intubation.

During FNPLS, the epiglottis, bilateral arytenoids, and false cords were oedematous. The patient was successfully intubated with an endotracheal tube size 7.5 mm. Blood results showed elevated total white blood cells (TWBC) of 20.7×10^3/μL and C-reactive protein (CRP) of 207 mg/L. He was then started on intravenous dexamethasone and intravenous amoxicillin/clavulanate acid, and was monitored in the Intensive Care Unit (ICU).

Fig. 1. Intraoperative picture of swollen epiglottis before pus evacuation

In the ICU, his condition improved, fever normalised, and blood parameters showed an improvement, with TWBC reduced to 15×10^3/μL and CRP to 175 mg/L. The leak test was positive on day 3 of intubation. The patient was successfully extubated. FNPLS revealed slightly resolving oedema of the epiglottis and false cords. The vocal cords were mobile and appeared normal.

Gradually, the man was able to tolerate normal diet with no shortness of breath. However, 2 days later, the voice was observed to be muffled. A bedside FNPLS confirmed a swollen epiglottis, partially obstructing the laryngeal inlet with punctum discharging pus (Fig. 1). CT of the neck affirmed the abscess collection in the epiglottis (Fig. 2).

Urgent drainage was commenced under general anaesthesia, and 3 ml of pus was evacuated. Post drainage, the TWBC was reduced to 10×10^3/μL. The pus culture grew *Pseudomonas aeruginosa.* He was extubated after 4 days and kept in the ward to complete another week of intravenous ceftriaxone. He continued to improve with no complaint of dysphagia or stridor. A repeat FNPLS demonstrated a normal-looking epiglottis and other supraglottic structures. He was discharged well 13 days after admission. After being followed up for 3 months, he is asymptomatic, with normal FNPLS findings.

DISCUSSION

Acute epiglottitis has the tendency to obstruct the upper airway, making it a potentially fatal condition. Previously, acute epiglottitis was considered to be a disease of children, caused most commonly by *Haemophilus influenza* type B (HiB) infection. However, of late, the disease has changed its epidemiological pattern. After HiB vaccine was introduced into the vaccination programme for children in 1985, the ratio of annual incidence in children to that in adults decreased from 2.6 in 1980 to 0.4 in 1990[4].

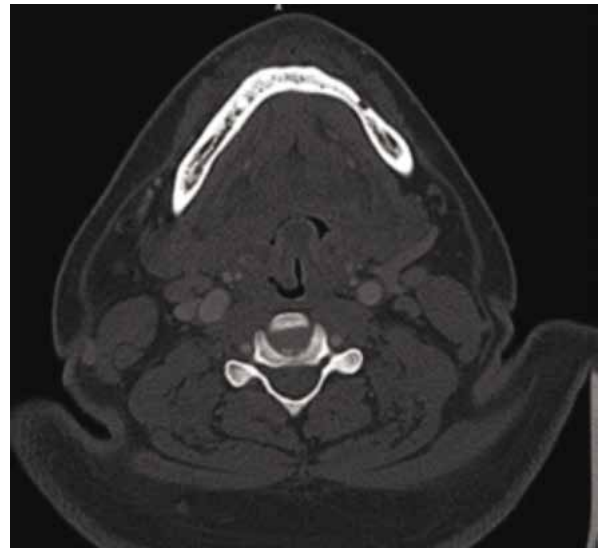

Fig. 2. CT neck showing abscess collection inside the epiglottis

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The mean annual incidence of acute epiglottitis per 100,000 adults significantly increased from 0.88 in the 1990s to 3.1 towards the year 2000[5]. It is postulated that this rise is unrelated to HiB infections, but rather associated with miscellaneous pathogenic bacteria[5]. The rising trend of adult epiglottitis is characterised by a mean age of onset at 49 years and male predominance[6].

Acute epiglottitis, due to is anatomy, carries an overall mortality rate of 1.01% because of upper airway obstruction[7]. Most affected patients present with odynophagia, followed by dysphagia, sore throat, dyspnoea, and voice change[8]. Patients usually have fever, and 42% have audible stridor[8]. The diagnosis of epiglottitis is by clinical evaluation, though normal oropharynx does not exclude epiglottis, as 44% of patients may have normal oropharyngeal findings[8]. FNPLS is used to visualise swollen epiglottis and supraglottic structures. Lateral neck radiography is an aid in the diagnostic process, but it is less sensitive (81.4%) than direct visualisation using FNPLS (100%)[6].

All patients with acute epiglottitis should have a proper evaluation of the airway with anticipation of airway obstruction. The laryngoscopic finding of narrowed airway is strongly related to the requirement for airway intervention[6]. Although most adults have no signs of airway obstruction, the clinical threshold for insertion of artificial airway should remain low[8]. 39% of patients need airway intervention[6]. All procedures that can induce airway compromise, such as indirect or rigid laryngoscopy, should be done in the controlled setting, for example, in the OT. If life-threatening airway obstruction does occur, immediate surgical airway can be established.

Epiglottic abscess is a rare sequela of acute epiglottitis occurring almost exclusively in adults[1,2]. From 80 cases of acute epiglottitis, 7.5% became epiglottic abscess[6]. This complication can either be due to coalescent epiglottic infection or from mucopyocele of the tongue base[5]. Asphyxial death due to epiglottic abscess rupture has also been reported[3]. The patient was only managed for acute epiglottis with a parenteral antibiotic, and within 2 hours bleeding from his mouth and nose occurred following haemorrhage due to abscess rupture. This shows that airway management must be the top priority of the attending medical personnel. In addition to the standard management of acute epiglottitis, which includes antibiotics and anti-inflammatory drugs, medical professionals must actively anticipate a complication of abscess and possibly a rupture causing airway obstruction.

Routine CT examination in patients with acute supraglottitis has been suggested, as there are no specific symptoms or signs suggesting that supraglottitis may develop into an abscess[9]. But in a busy tertiary centre or in a rural area with limited imaging facilities, this might be a problem. We suggest daily FNPLS to monitor the progression of the disease after admission, especially if the symptom worsens or does not improve with medication. It can be done at the bedside, is relatively painless, and can warn the surgeon of the early signs of abscess such as punctum formation. Once abscess formation is suspected, CT can be done to confirm the diagnosis and plan for surgical intervention.

The principle of treatment of epiglottic abscess includes aggressive airway management, surgical drainage, and intravenous antibiotics[1,2]. Needle aspiration has no significant additional benefit for the treatment of epiglottic abscess apart from reducing the length of hospitalisation[10]. Thus, abscess drainage under general anaesthesia is recommended to ensure total evacuation of pus, and affected patients must be kept ventilated until swelling of the epiglottis has subsided. Once extubated, patients must be monitored closely for possible re-accumulation. Antibiotic therapy should be directed towards the offending organism, based on intraoperative culture. HiB may be the exclusive pathogen in children, but adults may present with a variety of organisms (such as *Streptococcus pneumoniae*, *Staphylococcus aureus* and *Klebsiella* sp.)[5]. Therefore, empiric coverage should be provided using amoxicillin/clavulanic acid or 3rd generation cephalosporins like ceftriaxone, with broad-spectrum activity against both Gram-positive and Gram-negative organisms. Patients can be discharged once their clinical symptoms and signs have improved, as supported by FNPLS findings of resolved supraglottic oedema.

CONCLUSION

Epiglottic abscess is a rare complication of acute epiglottitis, but it must be actively anticipated. Failure in detecting abscess at the earliest may cause dire consequences such as airway obstruction and asphyxia. CT imaging may be needed in patients with epiglottitis which shows no response to antibiotic therapy. Exploration and drainage under controlled setting is recommended rather than aspiration which may not be able to drain the abscess completely. Patients should be closely followed even after the resolution of symptoms to ensure total eradication of the problem.

Conflict of interest

Authors do not report any financial or personal connections with other persons or organisations, which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

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