

Scarlet fever in an adult patient: A challenging diagnosis in an airway emergency

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Luísa Conceição Martins Ferreira¹, Ana Oliveira, Cláudia Pereira¹,
Alexandra Guedes and José Pedro Assunção

Abstract

Scarlet fever is essentially a childhood disease, although it may occur in all ages. Early diagnosis and treatment are essential in preventing the spread of infection and progression to life-threatening complications. The case presented describes the clinical difficulty in the diagnosis of scarlet fever in an adult patient with acute involvement of the airway (oedematous laryngitis) and the need for emergent orotracheal intubation and eventually tracheotomy. A high degree of suspicion related to the airway involvement is of utmost importance in an emergency room setting.

Keywords

Adult scarlet fever, airway emergency, case report

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Introduction

Scarlet fever is an infectious bacterial disease caused by group A beta-hemolytic streptococci. It is most common in children, with most young patients being immune to bacteria and therefore an uncommon disease in adults, with a prevalence between 5% and 15%.¹ Symptoms are often similar to those caused by other childhood infections. In scarlatine, the incubation period is 2–5 days and presents as acute pharyngitis associated with fever and myalgias, followed by a maculopapular rash, 12–24 h later. The rash feels rough and begins on the trunk, with cranial–caudal scattering.² The diagnosis is essentially clinical and penicillin is the treatment of choice. The disease should be treated timely in order to reduce potential complications.³

At least one in four major airway events in a hospital are likely to occur in either the intensive care unit (ICU) or the emergency department (ED).⁴ We aim to highlight the reasons for that and the need to improve the clinical management of these patients. The safety of airway management in the emergency room will be enhanced greatly by strong cooperation between anesthesia, intensive care, and emergency medicine staff.⁵

Case report

Informed consent as required

Patient information. A 44-year-old healthy male patient, presented with fever, myalgias, dry cough, and mild odynophagia.

He was self-medicated with over-the-counter medication consisting of an association of acetaminophen, brompheniramine, caffeine and ascorbic acid, and levodropropizine.

Clinical course and findings

Four days later, the patient was admitted to the emergency department presenting pruritic rash on the trunk and groin. After improvement with intramuscular clemastine, he was discharged from the hospital medicated with hydroxyzine. Three days later (7 days after the onset of the symptoms), the patient returned to the emergency department, due to worsening of symptoms, namely, severe odynophagia, generalizes pruritic rash, hoarseness, fever, dyspnea, and dry cough. On clinical inspection, no tonsillar hypertrophy or inflammatory signs of the oral cavity or posterior pharynx were detected and no cervical adenopathies were palpable. The patient was anxious and febrile (38°C), but was hemodynamically stable and had a peripheral oxygen saturation level of 100% without oxygen supplementation. A hypersensitivity reaction was assumed and intramuscular clemastine and intravenous hydrocortisone and lysine acetylsalicylate were

Hospital Center Tondela-Viseu, Anesthesiology Service, Viseu, Portugal

Corresponding Author:

Luísa Conceição Martins Ferreira, Hospital Center Tondela-Viseu, Anesthesiology Service, Av. Rei Dom Duarte, 3504-509 Viseu, Portugal.
Email: luisa_ferreira3@hotmail.com





Figure 1. Videolaryngoscope view.

administered. The patient was reassessed 2 h later, but maintained dyspnea and presented a more generalized exanthema, associated with fever and a peripheral oxygen saturation level of 100% without oxygen supplementation.

Diagnostic assessment

The laboratory tests revealed neutrophilia without eosinophilia and a protein-chain-reaction of 8.55 mg/dL ($N < 0.50$ mg/dL). The chest X-ray was normal. The diagnosis of a viral infection with bacterial over-infection and associated hypersensitivity reaction was hypothesized and the patient was discharged home medicated with azithromycin, paracetamol, and prednisolone.

Therapeutic intervention

The patient returned 4 h later due to significant worsening of dyspnea and stridor. At this time, pharyngeal edema was noticed. Intramuscular epinephrine (0.5 mg) was immediately administered, as well as intravenous clemastine (2 mg) and hydrocortisone (200 mg). A *Venturi* face mask was placed, with oxygen at 4 L per minute.

The Anesthesiology team was contacted for collaboration, due to the eminence of airway obstruction. On our arrival, the patient was terribly anxious, unable to speak, and seated upright. A stridor was audible and, in the imminence of complete airway obstruction, orotracheal intubation was immediately decided. Lidocaine 4% was used to achieve topical anesthesia and 1 mg of intravenous midazolam was administered. Direct laryngoscopy showed innumerable scattered vesicles and exuberant oedema of the oropharyngeal structures, deeming the identification of anatomical structures impossible. Orotacheal intubation was achieved in spontaneous ventilation, at second attempt with a videolaryngoscope and a no. 5 microlaryngeal endotracheal tube (Figure 1).

A surgical tracheotomy was later performed, to achieve adequate ventilation of the patient and intravenous antibiotic therapy with amoxicillin, clavulanic acid, and clindamycin was started. The patient was admitted to the intensive care

unit under sedation with remifentanyl and propofol and was mechanical ventilated till 16 h post-operatively.

Follow-up and outcomes

The clinical course, as well as the characteristics and localization of the rash, raised the suspicion of scarlet fever, at the ninth day of clinical symptoms. Blood cultures were performed for aerobic and anaerobic microorganisms and cervical computed tomography (CT) did not show cervical abscess. Despite the clinical criteria score, like Centor Score, was unlikely for streptococci (5%–10%),⁶ an oropharyngeal swab was performed and antigen for group A streptococci was positive. The antibiotic therapy was altered to penicillin G.

The patient progressed favorably, and was discharged from the intensive care unit to the ward on the third day post-tracheotomy. The tracheotomy was closed on the sixteenth day and the patient was discharged home on the nineteenth day.

Discussion

Scarlet fever is usually a childhood diagnosis, but it can also occur in adulthood.³ The differential diagnosis of a fever and a rash is broad. In the clinical scenario of a sandpaper rash in the presence of a sore throat and fever, scarlet fever should be considered.¹ It may be associated with complications such as rheumatic fever, glomerulonephritis, pneumonia, endocarditis, and meningitis. Local complications include peritonsillar and retropharyngeal abscesses, with a potential risk of airway involvement.⁷ If not diagnosed and treated in a timely manner, it can potentially lead to serious complications, such as laryngeal oedema and acute airway compromise.⁶ Adequate and timely treatment, with antibiotic therapy, is usually effective in treating the disease, preventing complications and bad outcomes.⁸ In the reported case, the emergent approach of the airway was difficult.

The major problem related to airway involvement was the delay in identification of a potentially life-threatening airway obstruction. The recent National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society (NAP4) has pointed out that at least one-quarter of major complications of airway management in hospitals are likely to occur in the ICU and ED.⁴ Poor identification of the patients at risk of experiencing airway problems and of the need for intubation is one of the main reasons, and the appropriate management of these patients is of major importance in reducing the morbidity and mortality.⁹

In our case report, endotracheal intubation cannot be achieved by direct laryngoscopy because identification of the anatomical structures was impossible. Awake intubation enlarges the margin of safety because patient maintains the patency of their own airway.¹⁰ Videolaryngoscopy can be used as a first-attempt intubation technique when a difficult airway is suspected.¹¹

Awake videolaryngoscopy seems to be probably faster, equally safe, and a less complex technique, when compared with awake fiberoptic intubation. Moreover, the ability to select different diameters of tracheal tube with awake videolaryngoscopy is extremely useful, especially when a micro-laryngeal endotracheal tube is needed.¹²

Nowadays, healthcare providers who work at emergency departments should improve their skills in videolaryngoscopy, because it is an important tool for airway assessment, airway care education, and medicolegal intubation recording.¹² Specific training of emergency room physicians in airway management and the presence of a senior physician with airway management experience, such as an anesthesiologist, are crucial when approaching these patients, improving the success rates of intubation and outcome.¹³

Conclusion

This case highlights the clinical difficulty of diagnosis of scarlet fever in the adult and the need for high clinical index suspicion for this diagnosis.

Anesthetists will continue to have a major role in advanced airway management in the emergency department and close collaboration between emergency physicians and anesthetists/critical care physicians should be encouraged.

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Ethics approval

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Informed consent

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ORCID iDs

Luísa Conceição Martins Ferreira  <https://orcid.org/0000-0002-1096-9910>

Cláudia Pereira  <https://orcid.org/0000-0003-0576-9372>

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