Therapeutics, Pharmacology and Clinical Toxicology
Vol XIX, Number 3, September 2015
Pages: 121 - 123

CASE REPORT

NECK SUPPURATIONS IN CHILDREN

Palade D.[1], Toader Miorița[2], Constantin Anca[2], Niculescu L.[2], Drăghici M.[3], Vivisenco Iolanda Cristina[2,4]

[1.] *University of Medicine and Pharmacy "Gr. T. Popa", Iaşi*
[2.] *Emergency Hospital for Children "Grigore Alexandrescu", Bucharest*
[3.] *Dentirad Hospital, Ploieşti*
[4.] *University of Medicine and Pharmacy "Carol Davila", Bucharest*

Abstract. In the past, neck suppurations were common causes of morbidity and mortality. Nowadays, the progress of antibiotherapy and rapid isolation of pathogenic bacteria with the antibiogram obtained in proper time, along with better living conditions and increased medical education of the population on hygiene conditions led to a significant decrease in the incidence of these diseases and an increase in the therapeutic success rate. Polybacterial etiology remained unchanged, with different pathogen combinations, often multiresistant to antibiotics. Infections can occur both in healthy individuals without significant local or general personal medical history and in people with existing diseases, which have been neglected or unknown. The authors present the diagnostic and therapeutic approach in one case of a child with neck suppuration, in which unusual pathogens for the paediatric ENT pathology were involved.
Keywords: neck suppuration, antibiotherapy, drainage, child

Background

Neck suppurations remain a current topic. The progress of antibiotherapy did not significantly affect the rate of complications in cases of acute upper respiratory tract infections, but using combinations of antibiotics did limit the number of deaths or sequelae[1]. Presentation of the patient to the doctor since the onset of the disease and compliance with the prescribed treatment are prerequisites for the favourable outcome of these diseases.

Case report

A 14 year old girl from the rural environment without significant pathological personal history was admitted in emergency to the ENT Clinic in the Emergency Hospital for Children "Grigore Alexandrescu", Bucharest for a giant laterocervical mass.

From history we have learned that the onset of the current disease was 10 days prior to the admission date with toothache for which the girl's mother administered of her own volition painkillers and antibiotic treatment - cefuroxime orally in insufficient dose for the child's age and body weight (7 mg / kg / day). In evolution, symptoms persisted, therefore the patient was seen by the local ENT specialist, who established the diagnosis of acute pharingitis and recommended laboratory tests that the mother has neglected, and a new antibiotic - amoxicillin + clavulanate (50 mg / kg / day). Because symptoms worsened after 72 hours, the patient was taken by her parents to an emergency room for adults in Bucharest, from which she was sent by ambulance in our clinic.

On admission, the patient was conscious, but with an altered general condition, low grade fever and a giant swelling on the left hemiface, extended in the laterocervical area and left supraclavicular fossa (Figure 1). She had also trismus and cough with frankly purulent sputum.

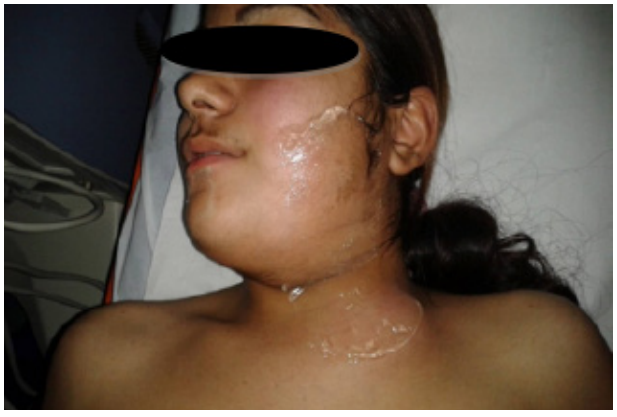

Fig. 1. Laterocervical giant swelling

Toader Miorița
30-32 Iancu de Hunedoara Blvd., Bucharest, Romania
e-mail: toadermiorita@yahoo.com

ENT examination revealed a painful and fluctuant swelling on palpation, extended from the apex of the mastoid to the supraclavicular fossa, anteriorly to the mediocervical line and submental space and posteriorly beyond the edge of the sternocleidomastoid muscle. Neck movements were possible, but difficult and painful.

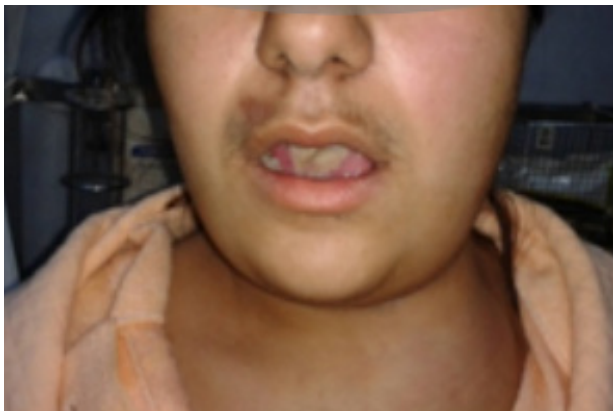

Fig. 2. Oropharingoscopy on admission

It was difficult to perform the oropharyngoscopy because the patient had trismus (Figure 2). We noticed saburral tongue, complete and cared dentition, without cavities or dental abscesses, slightly asymmetric oropharyngeal isthmus, slightly swollen left tonsil, normal pharyngeal mucosal color and pus draining from cavum nasi on the posterior wall of the oropharynx. Bilateral nasal passages and ear meatus were free, tympanic membranes were apparently normal, mastoid points were painless, the hearing was normal and cranial nerve examination did not show any pathological findings.

We immediately performed laboratory tests, which showed insignificant leukocytosis (10.35/mm^3) with discrete left shift of leukocyte formula, but with important inflammatory syndrome (ESR = 100 mm/h, fibrinogen = 732mg/dl, C-reactive protein = 8.5 mg/dl). A quantitative immunoglobulin determination was performed, which was within normal ranges.

Ultrasound examination of the swollen region revealed a transonic, impure collection with areas of hyperechoic, heterogeneous fluid, with maximum collection point in the left supraclavicular area, lack of vascularisation and left submandibular ganglia with inflammatory feature.

We completed the investigations with chest and sinus X-rays, which were within normal limits. We decided to explore the craniocervical and mediastinal region by computed tomography imaging (Figure 3), which highlighted the following:

- On the coronal section we noticed a fluid, hypodense collection, which does not capture the contrast dye, with the upper limit near the skull base, medial to the left internal carotid artery; the collection extends from the base of the skull until left supraclavicular fossa, anteriorly to the collarbone, pushing the pharyngo-laryngo-tracheal axis to the right, beyond the median line;
- Left palatine tonsil is edematous and increased in volume, but does not suggest a starting point for the collection (fig. 3.8, 3.10);
- There are multiple laterocervical lymphadenopathies with inflammatory features, without any change of the petromastoid bony structures (fig 3.9);
- On the transverse section we noticed diffusion of the collection in the retromandibular space, fistulization in the endolaryngeal space and presence of gas bubbles inside the supraclavicular collection, suggestive feature of necrosis and infection with anaerobic germs (fig. 3.1-4);
- The collection diffuses anteriorly to the collarbone, while respecting the superior thoracic aperture and mediastinum; it also diffuses in the submandibular and sublingual areas (fig. 3.5-6);
- Left parotid gland is embedded in the collection and has structural changes, being edematous infiltrated (fig. 3.7);
- The collection is also in contact with the pharynx and the larynx, which are pushed to the right of the midline; the collection fills the entire left parapharyngeal lodge, with maximum collection point in the left supraclavicular space;

No endocranial changes.

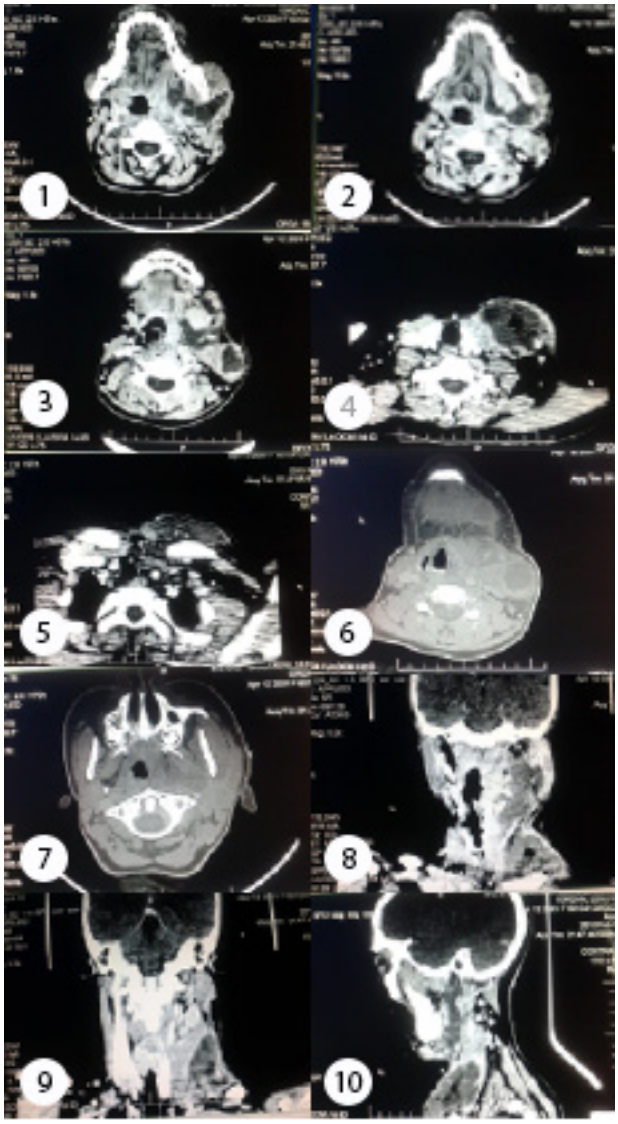

Fig.3. Computed tomography

Based on ENT clinical examination and imaging we established the diagnosis: left peritonsillar phlegmon fused in the laterocervical and supraclavicular space. We began intravenous empirical treatment with ceftriaxone, gentamicin and metronidazole, as well as rebalancing electrolyte infusion and analgesics.

The next step was to perform bacteriological sampling, required for the etiological diagnosis. We practiced peritonsillar puncture which was negative, but aspirate was sent to lab, in order to be examined microscopically and inoculated on culture media for aerobic and anaerobic germs. For microscopic examination we used various staining, that have highlighted the following:

- Giemsa stain - rich cellularity with 100% neutrophils, absent fusospirillary bacteria,
- Gram stain - polymorphic abundant flora with gram-positive cocci and bacilli, rare gram-negative bacilli, rare fungi, Ziehl-Nielsen stain – absent acid-fast bacteria.

48 hours after admission, we re-examined the oral cavity under general anaesthesia with spontaneous breathing. We practiced thick needle puncture in the upper pole of the left palatine tonsil which was negative. Subsequently, thick needle puncture was performed at the supraclavicular fossa, which was positive, followed by incision at this level and discharge of pus under pressure in high volume (400ml), with false membranes and bad smelling. We washed the cavity with povidone-iodine solution and we used a suction drainage with a drainage tube sutured to the skin and connected to a vacuum nylon bag.

At 72 hours after microbiological sampling, culture results and antibiogram were available. Aerobic cultures isolated the following germs:

- *Klebsiella pneumoniae* (gram-negative, facultative anaerobe);
- *Haemophillus parainfluenzae* (gram-negative);
- *Streptococcus mitis* (gram-positive, facultative anaerobe).

Anaerobic culture isolated Prevotella melaninogenica (gram-negative, anaerobe).

Based on bacteriological results, we decided to change the antibiotic therapy with the combination imipenem/cilastatin, vancomycin and metronidazole. The patient also received supportive treatment with gamma globulins. Parenteral antibiotic therapy was continued for 10 days with favorable outcome. The patient was discharged from the hospital after this period and oral antibiotic treatment with clindamycin was recommended at home.

Discussion

This case is peculiar and interesting. Studying literature data on microbial particularities, we notice that Prevotella melaninogenica is usually causing dentoalveolar infections [2]. However, our patient had impeccable teeth and no alveolar changes visible on CT scan. This bacterium plays a major role in subcutaneous infections produced by complex mixtures of indigenous oral bacteria. Prevotella melaninogenica tends to produce hydrogen sulfide, ammonia and cytotoxic substances, inhibiting at the same time phagocytosis and the ability of the host to kill other bacteria. In addition, the bacterium stimulates the host's immune system in order to produce substances which can cause tissue necrosis [2,3]. This may be an explanation for the rapid extension of the suppurative process in the presented case.

Haemophillus parainfluenzae is usually a commensal germ in oropharyngeal flora, being mainly isolated in the sputum of patients with chronic obstructive pulmonary disease [4,5]. Our patient had no history of acute or chronic pulmonary disease, chest X-ray and computed tomography confirming this. Also, this germ causes specific changes in the immune response, but our patient immunogram was absolutely normal. Haematological changes were predominantly inflammatory rather than infectious in this case.

Because the giant suppurative process was unilocular, all cervical spaces communicating with each other, the collection was completely drained. This facilitated the action of the antibiotics, which were chosen initially on empirical criteria, based on etiological probability, then according to antibiogram.

The severity of the case was given by the appearance of a large collection in a short time. Thus it was necessary to adopt an emergency approach, choosing an empirical association of antibiotics in order to cover both aerobic, as well as anaerobic germs and practicing incision and drainage of the collection within the first 48 hours, without waiting for the bacteriological results.

Conclusion

In conclusion, therapeutic protocol for neck suppurations must consider the host immune status, associated diseases, polymicrobial etiology and modern imaging investigations. Solving these cases requires working in a multidisciplinary team consisting of ENT physician, surgeon, pediatrician, laboratory physician, radiologist and, not least anesthesiologist.

References

1. Songu M, Demiray U, Adibelli Zh, Adibelli H. Bilateral deep neck space infection in the paediatric age group: a case report and review of the literature. *Acta Otorhinolaryngologica Italica.* **2011;31(3):190-193.**

2. Yanagisawa M, Kuriyama T, Williams DW. Proteinase Activity of Prevotella Species Associated with Oral Purulent Infection. *Current Microbiology.* **2006; 52(5): 375–8.**

3. Ingham HR, Tharagonnet D, Sisson PR. Inhibition of phagocytosis in vitro by obligate anaerobes. *Lancet.* **1977; ii: 1252–1254.**

4. Mitchell JL, Hill SL. Immune Response to Haemophilus parainfluenzae in Patients with Chronic Obstructive Lung Disease. *Clinical and Diagnostic Laboratory Immunology.* **2000;7(1):25-30.**

5. Hill SL, Pye A, Johnson MM. A role for Haemophilus parainfluenzae in chronic lung disease. *Am J Respir Crit Care Med.* **1997; 155: A105.**