



## PHARYNGEAL ADENOPHLEGMON IN IMMUNOCOMPETENT PEDIATRIC PATIENT

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**Abstract.** Deep neck infections are part of a group of pathologies with descending incidence due to the advances made in profilaxy and antimicrobial treatment methods. Because of the serious complications that these infections can provoke, early diagnosis and treatment are necessary. In the pediatric patients, the most frequent mechanism is direct extension of a superior respiratory tract infection via lymphatic nodes. Rouviere retropharyngeal node group must receive special attention because this is the primary drainage station for nasopharynx, important in tumoral and infectious extension. Fast treatment is necessary and a multidisciplinary team is often needed (pediatrician, infectionist, pediatric ENT and radiology doctors). We present the case of a 1 year and 3 months old male patient admitted for Pharyngeal adenophlegmon that resulted from a Superior Tract Infection (probably Acute pharyngitis). Broad spectrum antibiotic therapy and surgical drainage led to a sequel-free evolution

**Key words:** pharyngeal adenophlegmon, infection dissemination, pediatric pathology

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### Introduction

Deep neck infections are common in the pediatric population and can result via two primary mechanisms: either *direct extension* of a near-by infection or *inoculation* due to penetrating trauma (i.e.: foreign body inhale). *Iatrogenic* causes are rare and include laryngoscopy, oro-traheal intubation, ENT surgeries, nasogastric cannula and stomatology interventions.

*Etiology* usually involves multiple germ species, more frequently A group *Streptococcus* or *Stafilococcus aureus*. Anaerobes like *Bacteroides* species are less incriminated but still responsible for some deep neck infections, whilst *Haemophilus parainfluenzae*, *Fusobacterium* are rare etiologies. For immunosuppressed patients, *Mycobacterium tuberculosis* or *Bartonella henslae* should be tested when conventional treatment isn't getting any response.

We present the case of a 1 year and 3 months old patient, admitted initially in a pediatric ward with Acute pharyngitis, later transferred in National Institute of Infectious Diseases for Meningism suspicion. Thus, the

importance of rapid diagnose in deep neck infections is very well contured because of the possible complications which have high morbidity rate.

### Case presentation

Patient with irrelevant history (Urinary tract infection at 7 months old successfully treated with cefuroxym, cow milk proteins and egg Allergy, rare Superior respiratory tract infections) is admitted in the Infectious Diseases ward from a pediatric clinic with fever, sleepiness, altered general condition and right laterocolis.

The debute of the symptomatology was seven days prior with decreased appetite, general state alteration and abdominal distension. The pediatrician clinically establishes the diagnosis of acute Enterocolitis, and coproculture confirms infection with *E. coli* enteropathogen. Sumetrolim is recommended but, after 3 doses, symptoms continue and, after 36 hours, associates fever, somnolence, marked alteration of the general condition, and right laterocolis.

24 hours ago the patient was hospitalized in a pediatric clinic with the diagnosis of Acute pharyngitis. Laboratory investigations reveal leukocytosis with neutrophilia and inflammatory syndrome. Because the diagnosis does not explain the marked alteration of the

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general condition or laterocolis, a neurological consult is called up which raises the suspicion of Acute meningitis and the patient is transferred to the National Institute of Infectious Diseases for specialized therapeutic behavior.

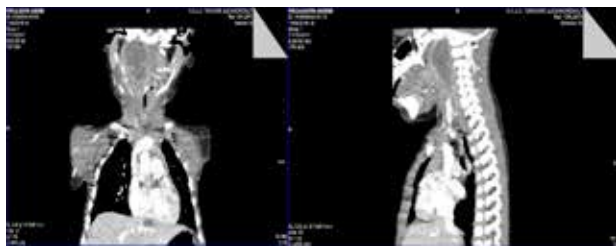
Upon admission, the patient is febrile, with mediocre general condition, with right laterocolis, right subangulomandibular adenopathy of firm consistency, pale skin without eruptive elements, abdominal cutaneous follicle with diminished turgor, poorly represented fat, cardio-respiratory balance, hyperemic pharynx with important bulging of the right pharyngeal plane with the palatine wave deviation on the left, non-acute abdomen, present gas transit, no fecal emission for 24 hours, present diuresis, without meningeal syndrome.

Laboratory findings reveal leukocytosis with neutrophilia, inflammatory biological syndrome, and soft-tissue ultrasound reveals a non-homogeneous formation in the right subangulomandibular level of 20/25 mm diameter.

The clinical examination, as well as the laboratory findings, raise the suspicion of Pharyngeal adenophlegmon.

Initial treatment was started with a parenteral alimentary diet, to which antibiotic treatment with Ceftriaxone was associated, subsequently escalated to Meropenem because evolution remained unfavorable, as well as symptomatic treatment.

Emergency ENT consult is requested at the Pediatric Emergency Clinical Hospital, where it is clinically and by computed tomography with intravenous contrast substance (Fig.1) confirmed the diagnostic of Pharyngeal adenophlegmon: Collection with parafluid densities approximately 35x19x42mm diameter with thick walls, anfractuous, iodophilus at retrofaringian level, right paramedian, from clivus to C5 vertebrae. Bilateral cervical adenopathy 8.5x6.5mm diameter (right) and 7.5x5mm diameter (left). Normal-looking mediastinum. Small alveolar pulmonary densifications in upper lobes, bilateral segments. No bone lesions at the examined segment.



**Fig.1. Computer tomography revealing pharyngeal collection**

Thus, the collection is being punctured with 5-6 ml of intense purulent fluid extraction, followed by multiple-level incisions through the oral cavity at the latero-pharyngeal site. Surgical drainage of the collection and the broad spectrum antibiotic therapy resulted in good outcome. Cultures following puncture reveal infection with methicillin-sensitive *Staphylococcus aureus*. The evolution is favorable but, in order to confirm the complete eradication of the infectious site, repunction is decided, with a negative result.

The patient was discharged with normal clinical and paraclinical examinations, sequelae-free.

The particularities of the case are represented by the fact that, although the diagnosis and the surgery were slightly delayed, outcome was favorable, sequelae-free, due to the early administration of massive antibiotherapy.

## Discussions

The most common sources of deep cervical space infection include pharyngitis, tonsillitis, adenoiditis, adenitis, otitis, sinusitis but are cited in literature and other infectious primary sites (nasal, salivary, dental). [1]

Deep neck infection risk factors include: low socio-economic status, poor oral hygiene and immunosuppression conditions, pediatric sphere (immature immunity, unattached retropharyngeal ganglia). [1,3]

The clinical presentation is dictated by the severity of the inflammation. In children, the inability to verbalize accusations or difficult cooperation coat the anamnesis and clinical examination in a subtle, sometimes difficult to diagnose form. [3] Thus, the suspicion of a deep infection must be raised in the face of a child (more frequently under the age of 5 years, the male sex is apparently more affected) with the following signs and symptoms: fever, lethargy, odinophagia or loss of appetite, trismus, dysfonia, hypersalivation, neck stiffness, oropharyngeal wall bumps, cervical masses, cervical lymphadenopathy, torticollis, facial edema or abundant rhinorrhea. [3]

Apparently, increased incidence of para- and retropharyngeal infections is often during cold seasons. [4,5]

Laboratory findings are nonspecific and reveal leukocytosis, an important inflammatory syndrome, sometimes mild anemia. Ultrasound of soft parts is often inconclusive due to the difficult collaboration with patients but also because of the profound localization of the infection.[1,2,3] Cervical neck radiography (lateral incidence) may be useful in diagnosis orientation, with an increased sensitivity (80%) according to the following criteria: thickening of the prevertebral tissue by more than 50% of the width of any cervical vertebral body, loss of physiological cervical lordosis or presence air/fluid column in the pre-vertebral shadow.[5] Computerized tomography has a high sensitivity rate (92%), being the investigation of choice in establishing the final diagnosis. [5]

There are no absolute contraindications to surgical drainage.[1,3] If the patient presents breathing problems, from the moment his airways have been checked and cleared, surgical drainage can be safely practiced. [3]

Complications of deep neck infections occur either by mass effect exerted on neighboring structures, such as retropharyngeal abscesses that can lead to compression of the airway, or by extension of infection that may result in mediastinitis, aspiration pneumonia, purulent pericarditis, piopneumotorax, pleurite, empiema;[1] Lateral extension of the infection, involving carotid arteries, can lead to thrombosis of the jugular vein (septic thrombophlebitis of the internal jugular vein - Lemierre syndrome) or carotid artery aneurysm. [1,2] If the extension of the infection occurs in the posterior site, complications such as

osteomyelitis or erosion of the spine may occur, resulting in vertebral subluxation and spinal cord injury. [1,2] Other complications include necrotizing fasciitis and sepsis, which can quickly lead to exitus.[1]

## Conclusions

Deep neck infections represent a group of pathologies still found among the pediatric population, despite the modernization of methods of diagnosis and treatment of infections.

The clinical picture depends on the depth of the infection, it is influenced by the age of the patient and requires increased attention to the diagnosis.

Paraclinically, computed tomography is the gold standard of diagnosis, preferably performed with intravenous contrast substance.

Treatment should be instituted promptly, and multidisciplinary collaboration (pediatrician, infectious, pediatric ENT, radiologist) is often required. It primarily targets hygiene-dietetic measures such as bed rest, strict

parenteral nutrition, proper oral hygiene. Frequently, empirical antibiotherapy is instituted until surgery and crop production are possible.

Most cases require prompt surgical intervention (incision, puncture, drainage) for complete resolution and avoidance of sequelae.

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