

## Interest of imaging in Lemierre syndrome: about 3 cases

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**Abstract :** Lemierre syndrome is a rare and serious pathology that can quickly become life-threatening. It is defined by septic thrombophlebitis of the internal jugular vein or one of its branches associated with septic emboli. It complicates an oropharyngeal infection in an immunocompetent patient. *Fusobacterium necrophorum* is the main germ responsible for Lemierre's syndrome. The role of imaging, and in particular of the cervical-thoracic CT scan with injection of iodinated contrast product, is essential for the diagnosis and the extension assessment. The prognosis of Lemierre syndrome is poor because it is a serious clinical picture and therefore depends on the speed of diagnosis from the first signs and adequate therapeutic management.

**Keywords :** Lemierre syndrome - Angina - Internal jugular thrombophlebitis - Septic pulmonary embolism - Cervical thoracic scan.

### Introduction :

Lemierre syndrome consists of septic thrombophlebitis of the internal jugular vein and more generally of any cervical vein complicating an infection most often oropharyngeal, but which can emanate from the entire cervicofacial region due to its extension to the lateropharyngeal space. It affects older children, adolescents and young adults [1].

The clinical presentation is variable, it can be pauci-symptomatic or result in a real emergency revealed by a peritonsillar, parapharyngeal or pulmonary abscess [2].

### Clinical observations:

#### Case 1:

This is a 6-year-old male child, with a history of recurrent otitis media. He had a left laterocervical swelling that had been developing for two weeks before his admission to the pediatric emergency room. On clinical examination: the patient was hemodynamically and respiratory stable (SatO<sub>2</sub>: 94% in room air), conscious and febrile at 39. A biological assessment was performed objectifying white blood cells at 19000 and a CRP of 160mg/l.

Radiologically, a cervicothoracic CT scan without and with injection of iodinated contrast product showed a multiloculated collection under the left angulo-mandibular region, associated with a partial thrombosis of the homolateral internal jugular vein (figure 1, figure 2).

Given this clinical and radiological aspect, the diagnosis of a superinfected branchial cyst complicated by Lemierre syndrome was mentioned. The patient have received antibiotic therapy and benefited from a puncture of the collection which allowed a clear clinical improvement.

#### Case 2:

A 15-year-old male patient with no particular history who was hospitalized in the pediatric emergency for bilateral orbital swelling that had been developing for 15 days. On clinical examination: the patient was hemodynamically stable, febrile, conscious, with meningeal stiffness, associated with bilateral orbital swelling and a large collection of the right upper eyelid with inflammatory signs.

The ophthalmological examination found bilateral palpebral edema with a significant collection of the right upper eyelid with inflammatory signs, no spontaneous opening of the two eyeballs, with the presence of bilateral chemosis and purulent secretions, cornea and lens appeared clear.

On biological assessment: White blood cells: 13750, Neutrophils: 11070, CRP: 320.

A craniocervical CT scan with PDCI was performed showing a large right upper eyelid collection with upper extra-conical endo-orbital extension reaching the orbital apex, associated with a collection of the right pterygoid lodge, extending to the homolateral infratemporal fossa. We founded also a cerebral venous thrombosis of the two sigmoid sinuses, the internal jugular veins bilaterally and the right innominate trunk (figure 3, figure 4).

The patient have benefited of antibiotics with lavage and artificial tears, and underwent drainage under transcutaneous sedation. The clinical evolution was marked by the onset of chest pain with episodes of hemoptysis, hence the indication for a chest X-ray showing round opacities with blurred contours bilaterally. Chest CT scan confirmed the presence of multiple bilateral parenchymal pulmonary nodules; some of which are excavated, with thickened walls, randomly distributed, associated with areas of ground glass at the basal level bilaterally suggesting septic emboli (Figure 5).

Following severe hemoptysis lasting an hour, the patient suffered from cardiorespiratory arrest, which could not be recovered despite intubation and cardiac massage lasting 45 minutes.

### Case 3:

A 19-year-old mal patient, with no particular history, who presented to the emergency department for odynophagia with trismus dating back two weeks before his admission to the emergency department with the appearance of a left laterocervical swelling, gradually increasing in size, all developing in a context of fever and unquantified weight loss.

On the respiratory level, the patient reported laterothoracic pain for a week.

On the biological assessment: White blood cells: 30090, Polymorphonuclear neutrophils: 20300 and CRP: 217.

A cervical-thoracic CT scan was performed showing: a left subangulo-mandibular collection with a thrombosis of the left jugular vein (figures 6 and 7). Multiple right upper and lower lobar pulmonary parenchymal nodules; excavated for some associated to a bilateral pleural effusion of moderate abundance (figure 8); encysted in places.

The patient underwent a pleural puncture with cytobacteriological and biochemical study and have benefited of an antibiotic therapy.

### Discussion

Lemierre syndrome typically affects adolescents, young adults and older children, it is revealed late in an average period of 12 days, after the patient has presented the symptoms of an infection of the ENT sphere [2,3,4]. Patients typically present with a highly febrile state, chills, odynophagia, asthenia and a more or less painful swelling of the laterocervical region, as is the case for our patients. A Lemierre syndrome should be evoked when the patient presents, following an oropharyngeal infection, with a clinical picture of sepsis and/or laterocervical pain disproportionate to the abnormalities detected during clinical examination of the oropharynx and cervical region [1, 3].

The vascular tropism of this germ causes thrombophlebitis of the homolateral internal jugular vein or one of its branches as in the case of our three observations. Septic emboli cause distant infarcts, which contain the microorganisms and lead to the formation of abscesses [5]. Two of our patients had pulmonary septic emboli.

Chest X-ray can sometimes help with diagnosis by showing septic emboli in the form of multiple opacities, rounded, well-defined, peripheral, systematized or not, most often bilateral and evolving towards cavitation. Sometimes, a pleural effusion forms, unilateral or bilateral, free or compartmentalized and can become abscessed [6]. In our series, only one chest X-ray was suggestive of septic emboli.

Cervical CT scan with injection of contrast product is considered the first-line examination; because it allows visualizing the thrombosis of the internal jugular vein, specifying its extension as well as looking for complications, either loco-regional such as cervical abscesses, or distant, such as septic pulmonary embolisms.

Cervical venous echo-Doppler, as an alternative or in addition to the CT scan, has excellent sensitivity. It allows the visualization of endoluminal material with the possibility of dating the thrombotic event according to the echogenicity of the thrombus, of showing incompressibility of the vein and the absence or reduction of circulatory flow. However, it is limited in the evaluation of the extension of the thrombosis by anatomical constraints such as bony reliefs. It is a relevant examination in the monitoring of thrombosis in order to judge the recanalization of the initially thrombosed vessel [11,12].

Cervical magnetic resonance imaging allows a precise study of the thrombus, the vessel, the inflammation and the locoregional complications. However, due to its cost and availability, it is not recommended in clinical practice for the diagnosis of Lemierre syndrome. [11,12].

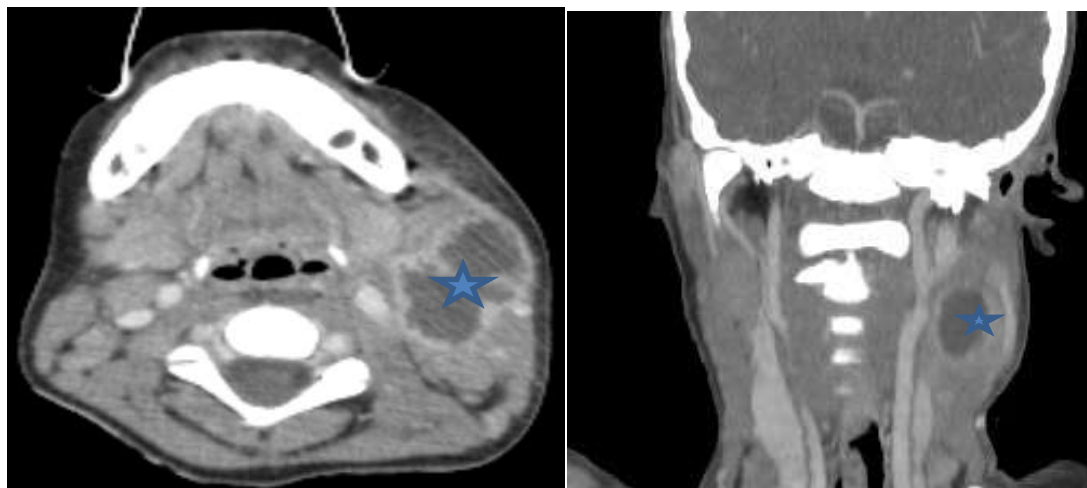
Blood cultures may remain negative, especially if the patient was previously under antibiotics.

Treatment of Lemierre syndrome is based on appropriate antibiotic therapy, sometimes supplemented by ENT surgery. Medical treatment mainly consists of antibiotic therapy. Ideally based on the data from the antibiogram, it is not recommended to use antibiotics as monotherapy [1,2, 7, 8]. The duration of treatment varies depending on the clinical response, and can be extended from 2 to 6 weeks [9, 10]. The intravenous drip is preferable. The use of anticoagulants is controversial. It would be a question of

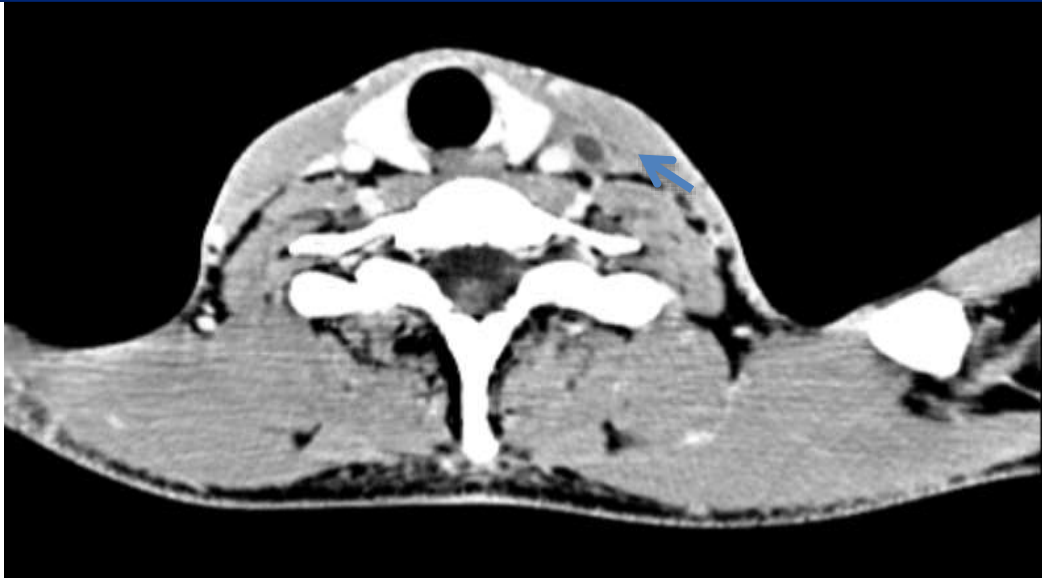
evaluating the benefit – risk for the patient. Some authors believe that a well-targeted antibiotic therapy and the drainage of a possible local collection are sufficient [2]. Anticoagulants should be reserved for patients with progression of thrombosis towards the cerebral sinuses [4, 9] and/or be used in the context of clinical deterioration despite good antibiotic therapy and well-conducted surgical treatment.

*Conclusion:*

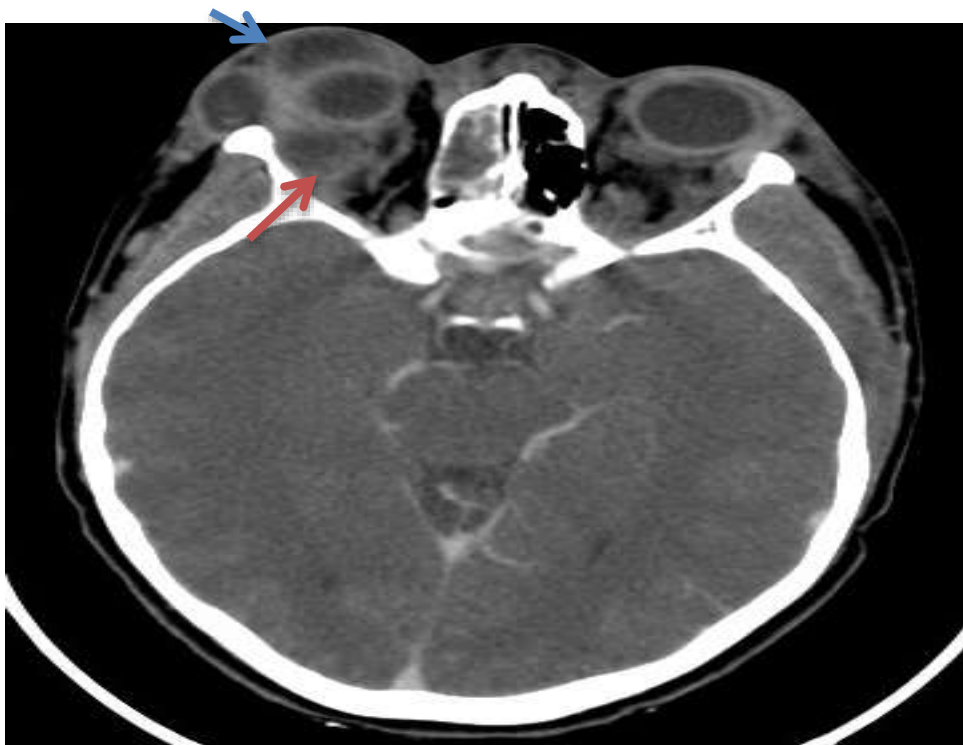
Lemierre syndrome is a potentially life-threatening condition, for which a high degree of suspicion should be maintained. The cervicothoracic CT scan with injection is the key element of the diagnosis by revealing internal jugular thrombophlebitis or one of its branches, septic pulmonary metastases and other cervicothoracic complications.[11]. The treatment is medical, possibly supplemented by a surgical approach depending on the case.



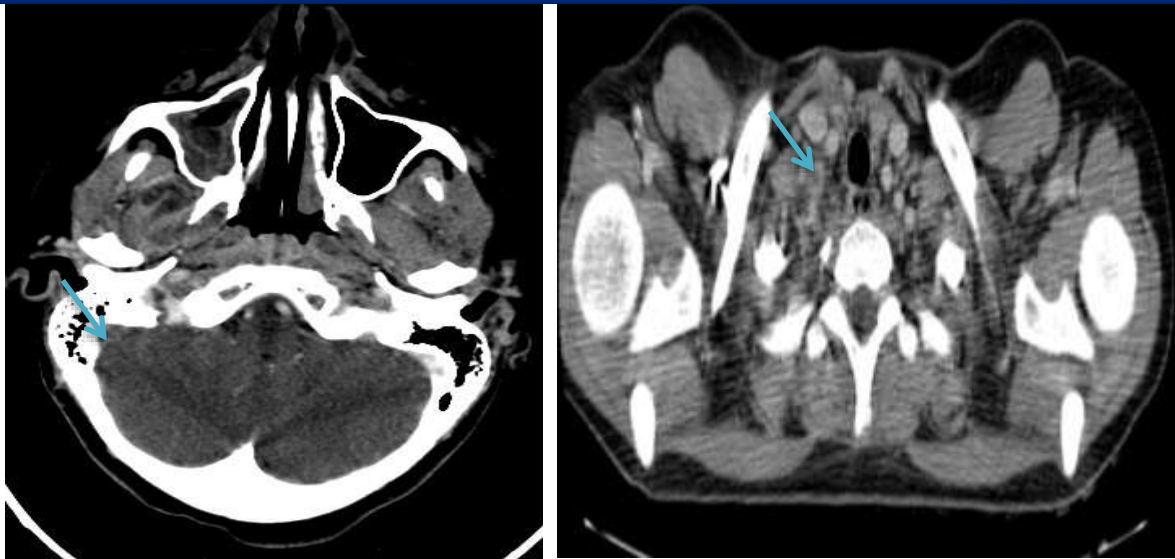
*Figure 1: Cervical CT scan after injection of contrast product, in axial section showing a superinfected branchial cyst.*



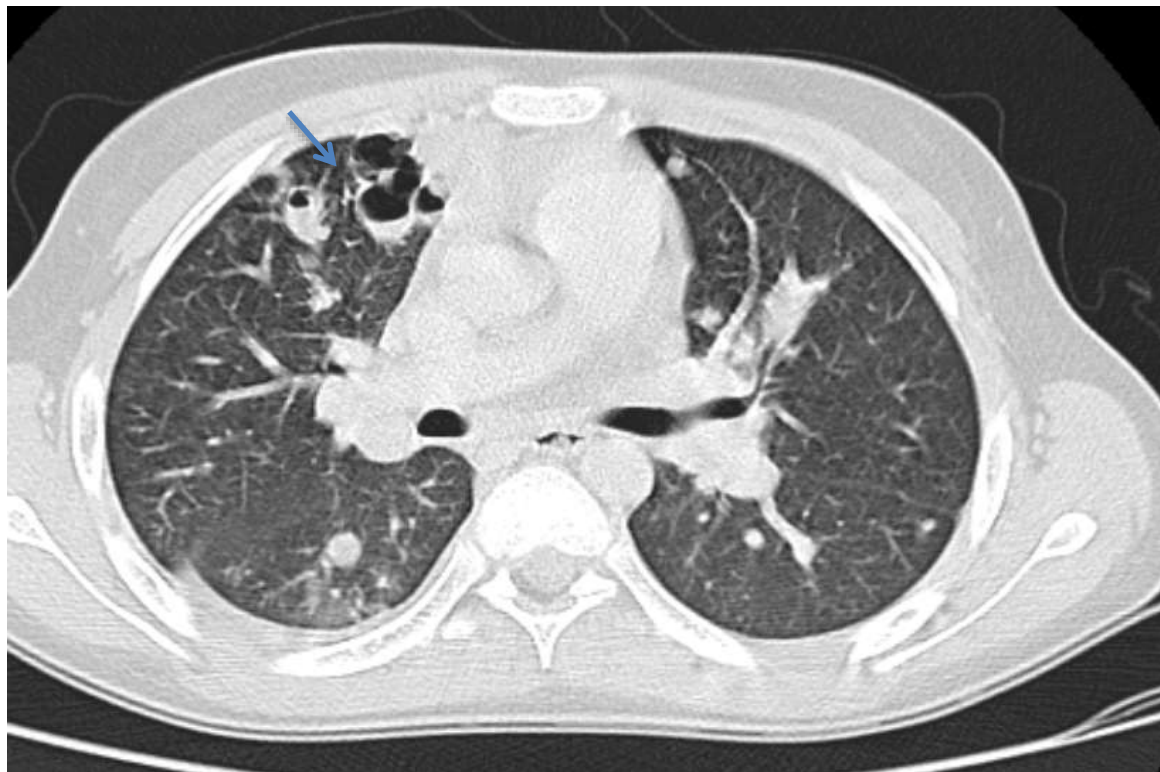
*Figure 2: Cervical CT scan after injection of contrast showing thrombosis of the left internal jugular vein.*



*Figure 3: Axial section showing a large upper eyelid collection right (blue arrow) with extra-conical endo-orbital extension (red arrow).*

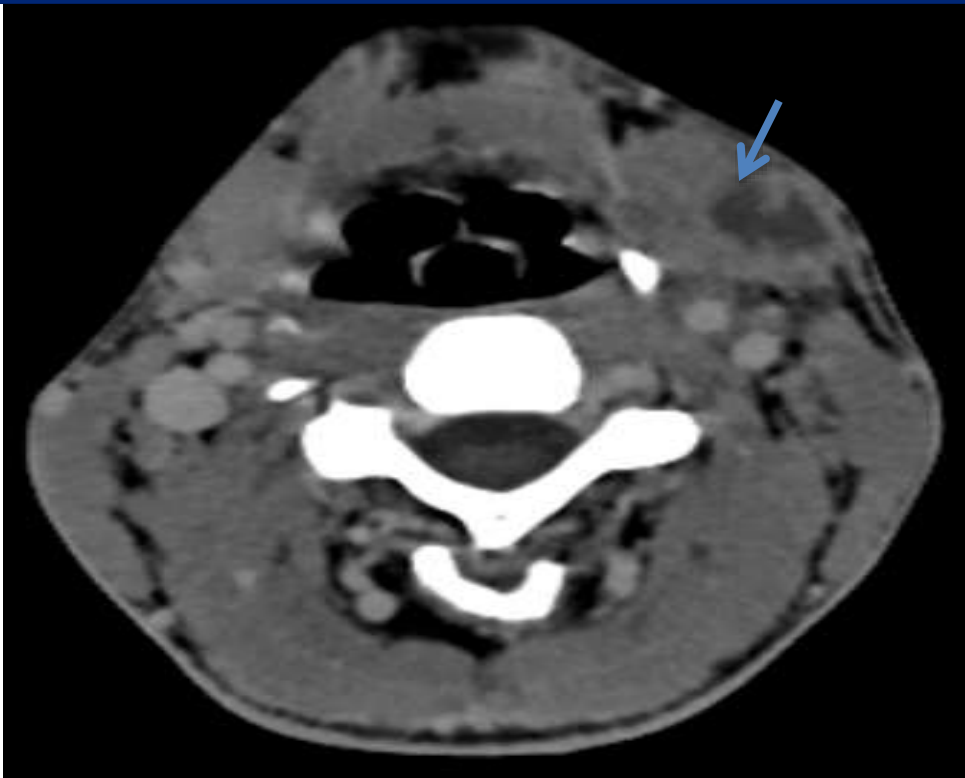


*Figure 4: Cervical CT scan after injection of contrast showing thrombosis of the right sigmoid sinus and the homolateral internal jugular vein (blue arrow).*

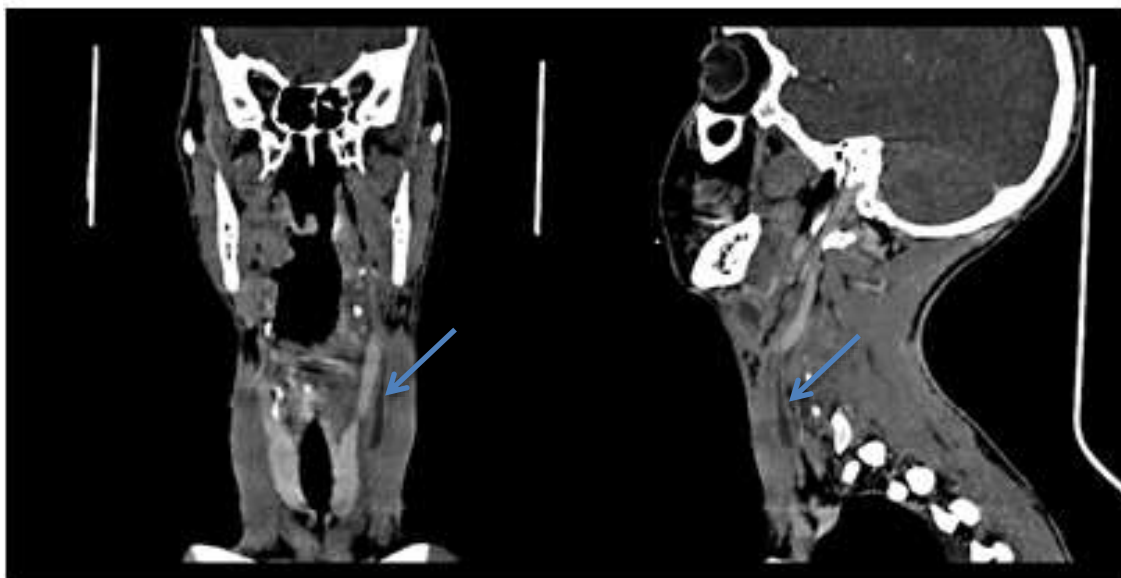


*Figure 5: Chest CT scan showing excavated and irregularly contoured pulmonary nodules.*

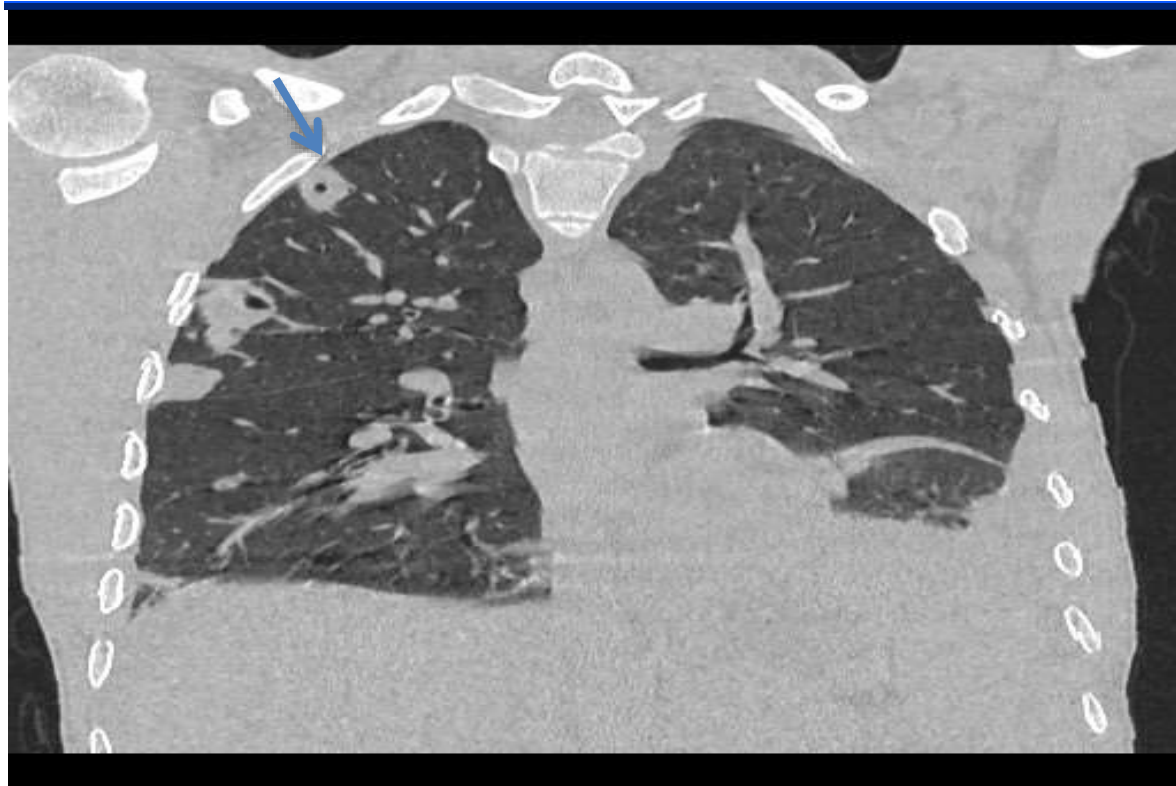




*Figure 6: Cervical CT scan after injection of contrast product, in axial section showing a left subangulo-mandibular adenophlegmon*



*Figure 7: Cervical CT scan after injection of contrast product, in coronal and sagittal section showing thrombosis of the left internal jugular vein.*



*Figure 8: Chest CT scan showing excavated and irregularly contoured pulmonary nodules.*

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