ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

PLEURAL EMPYEMA ASSOCIATED WITH SUBMANDIBULAR ABSCESS: CASE REPORT FROM A HOSPITAL IN THE ECUADORIAN AMAZON

Santiago Andrés Vintimilla Pesántez[1] , Karen Sofía Suscal Peláez[2], Bryam Esteban Coello García[3], Andrea Estefanía Cañar Mendes[4], Pablo Israel Guaillas Morocho[5], Boris Glenn Chang Tapia[6], María Antonieta Flores Salinas[7]

[1]General Practitioner in independent practice, Faculty of Medical Sciences, Universidad de Cuenca. Azuay - Ecuador. ORCID: https://orcid.org/0000-0003-1450-6128

[2]General Practitioner in independent practice, Faculty of Medical Sciences, Universidad Católica de Cuenca. Azuay - Ecuador. ORCID: https://orcid.org/0000-0002-4631-3091

[3]General Practitioner in independent practice, Faculty of Medical Sciences, Universidad de Cuenca. Azuay - Ecuador. ORCID: https://orcid.org/0000-0003-2497-0274

[4]General Practitioner in Primary Health Care - Ecuador. ORCID: https://orcid.org/0000-0003-3205-8074

[5]General Practitioner in Primary Health Care - Ecuador. ORCID: https://orcid.org/0000-0001-9835-5528

[6]General Practitioner in independent practice, Faculty of Medical Sciences, Universidad de Cuenca. Azuay - Ecuador. ORCID: https://orcid.org/0000-0001-7903-688X

[7]General Practitioner. Centro de Salud Familiar Doctor Manuel Ferreira de Ancud, Policlínico Ancud, Mutual de seguridad. CESFAM-Ancud - Chile. ORCID: https://orcid.org/0000-0002-8217-7816

Article DOI: https://doi.org/10.36713/epra11177
DOI No: 10.36713/epra11177

SUMMARY

INTRODUCTION

Pleural effusion is a pathology resulting from overproduction of pleural fluid and decreased absorption. Transudative pleural effusions are caused by general alterations in formation and absorption, as in the case of cirrhosis or heart failure. Exudative pleural effusions are usually caused by local alterations that affect physiology, such as pneumonia, neoplasms or pulmonary embolisms. The origin of the fluid in the present clinical case comes from the presence of an infectious process located in the sub-mandibular region, due to poor hygiene and oral care of the patient, which leads to bacterial pneumonia, which evolves into empyema.

CLINICAL CASE

The clinical case is presented of a 43 year old male patient, attended in a hospital in the Amazon, belonging to the province of Morona Santiago-Ecuador, with a personal history of chronic alcoholism; and the presentation of a picture of pain in the oral cavity of moderate intensity, associated with purulent secretion of moderate quantity, which evolves unfavourably with non-productive cough and pleuritic pain. Complementary studies were carried out which revealed the presence of pleural empyema and submandibular abscess.

EVOLUTION

The patient was treated with broad-spectrum antibiotic therapy, vasoactive support management due to the presence of septic shock and management of his dental problems. In addition, radiographic and tomographic images were taken to confirm the patient's critical clinical condition. Subsequently, the patient decided to request medical discharge to go to another private health unit of greater complexity.

CONCLUSIONS

Neck abscesses are the result of dental disorders which, if not treated immediately, are a strong predisposing factor for infections in other regions of the body through dissemination, such as the lung, mediastinum and pericardium. The different causes of empyema are of vital importance, because diagnosing the possible aetiologies of empyema can lead to a correct and more targeted management and treatment of the cause.

KEY WORDS: *Empyema, Submandibular abscess, Pleural effusion*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

ABSTRACT

INTRODUCTION

Pleural effusion is a pathology product of the overproduction of said fluid and decreased absorption. Transudate-type effusions are produced by general alteration of formation and absorption, as in the case of cirrhosis or heart failure. Exudate-type pleural effusions are usually caused by local alterations that affect physiology, such as pneumonia, neoplasms or pulmonary embolisms. The origin of the liquid in the present clinical case comes from the presence of an infectious process located in the sub-mandibular region, due to the poor hygiene and oral care of the patient, which leads him to present a bacterial pneumonia, which evolves to an empyema.

CLINICAL CASE

The case of a 43-years-old patient, treated in a Morona Santiago Hospital, with a history of chronic alcoholism, with symptoms of oral cavity pain of moderate intensity, associated with purulent flux in moderate quantity, which continues unfavorably with non-productive cough and pleuritic pain. Complementary studies are made in this patient, what shows the presence of Pleural Empyema and Submandibular Abscess

EVOLUTION

The patient was treated with broad-spectrum antibiotics, vasoactive support because of the presence of septic shock and the treatment of oral problems. Furthermore, X-ray images and CT scans had been made to confirm critical clinic status of the patient. Nevertheless, the patient requests medical discharge to go to another private and more complex health unit.

CONCLUSIONS

Neck abscesses are the product of dental alterations that, if not treated immediately, are strongly predisposing to infections in other regions of the body, due to dissemination, such as: lung, mediastinum and pericardium. The different causes of empyema are of vital importance, because diagnosing the possible etiologies of empyema can lead us to correct management and treatment, and more directed towards the cause.

KEY WORDS: *empyema, submandibular abscess, pleural effusion*

INTRODUCTION

Pleural effusion is a common clinical problem, with an estimated prevalence of 400 per 100,000 patients. Pleural fluid occurs in a small amount, which lies in the cavity between the pleural layers and allows both layers to slide easily. Pleural fluid enters the pleural space through systemic capillaries due to differences in hydrostatic and oncotic pressures between the two pleurae and the pleural space. This fluid is reabsorbed by the lymphatic system, although it is more dependent on the parietal pleura. Now, pleural fluid is mediated by a variety of mechanisms related to increased pleural fluid production, reduced reabsorption or a combination of these (1)(2).

The first step to take in pleural effusion (or suspected pleural effusion) is always to determine what type of fluid it is; it may be transudate (increased hydrostatic pressure or negative pleural space pressure, or reduced oncotic pressure), or exudate (increased permeability in capillaries or obstruction of lymphatic drainage from the lungs). Generally, exudates occur when the pleura is involved, whereas transudates do not. This differentiation is made by means of Light's Criteria, which are mentioned below:

- Pleural fluid protein / serum protein greater than 0.5
- Pleural fluid LDH / serum LDH greater than 0.6
- Pleural LDH greater than ⅔ of serum LDH at its maximum limit

The presence of one of these is sufficient to identify whether the fluid in a pleural effusion is a transudate or exudate (2)(3)(4).

The main precursors of thoracic empyema are bacterial pneumonia and parapneumonic effusion. Other causes of empyema include bronchogenic carcinoma, oesophageal rupture or penetrating chest trauma, mediastinitis with pleural extension, and thoracic or cervical spinal infections, among others. Despite the use of antibiotics and the availability of pneumococcal vaccines, empyema remains a complication of pneumonia and a major cause of morbidity and mortality. Statistically, nearly 1 million patients are hospitalised in the United States each year for pneumonia. Of those, 20 to 40% suffer parapneumonic effusion, and 5 to 10% progress to pleural effusion. Fifteen percent of these patients die and 30% require drainage of the fluid (5).

Pleural fluid is normally 0.2 ml/kg/hour, which implies that the total volume of pleural fluid. The parietal region is characterised by the highest pleural fluid production and is the site of greatest pleural fluid reabsorption. In the case of pleural effusion due to left heart failure, there is an exception to the rule, where the fluid comes from the visceral pleura. The volume of pleural fluid is determined by the balance between the difference in hydrostatic and oncotic pressures, which are present between the circulation (pulmonary and systemic), and the pleural space. pleural fluid is reabsorbed via the lymphatic pathway into the parietal pleura. Pleural effusion is caused by a disturbance in the balance, usually increased production and decreased reabsorption. Decreased oncotic pressure, elevated pulmonary capillary pressure, increased permeability, lymphatic obstruction and decreased negative intrapleural pressure are the pathophysiological components leading to all the features of pleural effusion (6).

Clinical Presentation

Many of these patients have no symptoms that can be attributed to the effusion per se. If symptoms are evident, it reflects an inflammatory response of the pleura, a restriction of pulmonary mechanisms or alterations in gas exchange. The most common symptom arising from a pleural inflammatory response is pleuritic pain, which is provoked by the parietal pleura (the visceral pleura has no nociceptive nerve fibres).

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

The pain is usually felt in the region of the origin of the effusion, and is usually related to the respiratory cycle. As soon as the pleural effusion is resolved, the pleuritic pain disappears. The pain describes a diffuse pain, accompanied by a feeling of pressure in the chest. Another symptom that may occur is dyspnoea. The severity of dyspnoea is only related to the extent of the pleural effusion, which occupies space in the chest, right at the site of parenchymal occupation, and is therefore associated with a decrease in lung volume. The rapid clinical improvement of dyspnoea after pleural drainage probably reflects the transition to an improvement of the tension-length curve of the respiratory muscles, especially the diaphragm. In addition, some patients are accompanied by a dry cough, which may be explained by pleural inflammation or lung compression due to the extent of the effusion. In addition, pleural effusion can also markedly impair sleep quality (6).

Physical Examination

Vesicular murmur is diminished or absent at the bases, in addition to basal dullness. Tachypnoea may be present if the effusion is extensive. Pleural rub may be evident in the early stages of a parapneumonic effusion. In clinical practice, determination of the location of the pleural effusion, whether unilateral or bilateral, is made with chest radiography. The clinical history and physical examination serve as a guide for further examinations and may suggest more accurately whether it is a transudate or exudate. If, for example, the patient presents with clinical signs of congestive heart failure with peripheral oedema, oedema, tachycardia, a third sound, jugular vein distension and bilateral dullness to percussion of the lung bases, it is most likely cardiac in origin, and is more likely to be a transudate rather than an exudate. In either case, depending on the suspected type of pleural effusion, it is classified as transudate or exudate (6).

Empyema and Parapneumonic Effusion

Exudates are commonly caused by pneumonia, also called parapneumonic effusion. Empyema refers to a frank infection or pus within the pleural space. Despite current management of pneumonia, mortality is higher in patients presenting with parapneumonic effusion than in patients presenting with pneumonia without effusion; and delaying the effusion is associated with increased mortality. It is important to consider atypical symptoms in older adult patients with the presence of pneumonia, because late diagnosis in these patients may complicate even the drainage of the parapneumonic effusion. The correct selection of antibiotics based on normal microbiology and antibiotic resistance is crucial; patients with community-acquired pneumonia tend to be caused by streptococcal and anaerobic species, while nosocomial infections are caused by methicillin-resistant staphylococcus and gram-negative bacteria (7).

Diagnostic Imaging

If an exudate is identified but its cause is not obvious, further investigation is needed to find the source. Chest CT with contrast is recommended by the British Thoracic Society guidelines to guide further assessment. This can lead to demonstrate specific aetiologies and help determine the next steps to take. Some experts suggest routine investigations to exclude pulmonary embolism as a cause of the effusion, as pleural effusion has been reported to occur in half of all pulmonary embolism episodes (8).

Treatment

Antibiotic Therapy

Antibiotic use should be based on recommendations according to bacteriological prevalence and antibiotic sensitivity management, and patient-specific risks. Antibiotics should be started empirically and then determine whether it is a community-acquired or hospital-acquired infection, or cultures and antibiograms, as well as the effectiveness of the antibiotic in the pleural fluid. In community-acquired infections, the recommended combination is Amoxicillin and Clavulanate monotherapy or third generation cephalosporins combined with clindamycin or metronidazole. Concentrations of these antibiotics in pleural fluid are more than 75% higher than in the bloodstream. In patients with penicillin allergy, the combination of a quinolone with metronidazole/clindamycin is an option. In nosocomial pleural infections, where methicillin-resistant Staphylococcus aureus is very common, empirical treatment should cover these in addition to anaerobes (Vancomycin/Linezolid), antipseudomonal penicillins, carbapenemics or third generation cephalosporins associated with metronidazole (9).

Thoracic drainage

The guidelines of 3 societies are consistent in the fact that purulent pleural effusion, with a Gram+ culture result, or pH less than 7.2 is less likely to resolve without early drainage of the pleural space. In addition, 2 guidelines recommend that pleural drainage be performed without the fluid occupying more than half of the hemithorax. The options for empyema drainage are:

1. Repeat therapeutic thoracentesis
2. Insertion of a thoracic catheter
3. Administration of intrapleural treatment through the thoracic catheter (fibrinolytics, deoxyribonuclease or combination).
4. Performing pleuroscopy with adhesiolysis and/or decortication
5. Performing thoracotomy with decortication

The latter two options represent surgical management of empyema or complicated pleural effusion (9).

Therapeutic Thoracentesis

Although the repeated performance of therapeutic thoracentesis has been widely used, it has recently gained interest. In a study in which thoracentesis was performed in 250 patients, 76% of patients had a favourable resolution after an average of 3 interventions. In another study, they mention that if the volume of the first thoracentesis was more than 450 millilitres, the risk of procedural failure is high. Furthermore, it is recommended that this technique be performed in patients with small to moderate pleural fluid (9).

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

Chest Tube

Chest tube placement is the most common route for draining empyemas. Although there is no definite consensus, clinical practice guidelines suggest that short-gauge tubes (10-14 F) are suitable for pleural infections and are easier to insert, as well as being less painful for the patient. In any case, pleural drainage tube insertion should be placed under image guidance, usually ultrasound (9).

Deep Neck Abscesses

Among the spaces most associated with odontogenic infections and their spread to underlying spaces with moderate to severe complications are the retropharyngeal and parapharyngeal spaces. Infections that spread into these spaces have a high morbidity and mortality rate, as the dermis and epidermis are generally not altered. On physical and visual examination, abscesses are not adequately identified and have a rapid downward spread, which explains why when an abscess is in the parapharyngeal space it has direct communication with the retropharyngeal space, which in turn spreads directly to the fasciae found in the pleural areas, causing one of the most common complications: pleural effusion. When this is not detected in time and its management and drainage, if necessary, is not adequate, it progresses to the development of pneumonia; These pneumonias are usually accompanied by inflammatory states of poor response to normal antibiotics with CRP that usually exceeds 41 mg/dl; due to its low presentation and depending on the previous clinical condition of the patient as well as the days of evolution of the case, empyema and mediastinitis may occur (10)(11).

These correspond to the presentation of pus between the fasciae of the head and neck, and their main origin in adults is dental infections, which are not controlled by antibiotic therapy, either because it is poorly directed or has a late onset. In addition, certain predisposing factors such as immunodeficiencies, foreign bodies, trauma at the site of onset of the lesion and hygienic-social factors must be taken into account. In order to know the extent of these abscesses, the anatomy of the neck must be understood, with the existing spaces and their distribution among them, since bacteria, viruses or secretions that are normally found in the oral cavity in a saprophytic form can spread through these communications and become infectious when they enter sterile spaces. The spaces or levels to be taken into account are:

- Parapharyngeal
- Peritonsillar
  - Chewed
- Submandibular
  - Parotid
- Retropharyngeal
- Prevertebral
- Carotid (12).

CLINICAL CASE

A 43-year-old male patient, with a history of chronic alcoholism and poor oral care, attended the emergency department of the Misereor Basic Hospital in the Amazonian city of Gualaquiza (Ecuador) on 30 June 2021 for presenting, with no apparent cause, pain in the oral cavity of moderate intensity, associated with moderate purulent chocolate-type purulent secretion. His clinical picture evolved unfavourably, presenting with non-productive cough, dyspnoea on moderate exertion, pleuritic pain, which intensified with inspiration, unquantified thermal rise and moderate pain in the submental region.

PERSONAL HISTORY: Chronic alcoholism since the age of 20, with a consumption of 2 to 3 times a week, until drunkenness. Poor hygiene and oral care.

FAMILY BACKGROUND: Does not refer to

PHYSICAL EXAMINATION:
Vital signs: Blood Pressure: 90/60 mmHg, Heart Rate: 130 bpm, Respiratory Rate: 24 rpm, Temperature: 39 C, Capillary refill 2 seconds, O2 Sat: 89%.

General appearance: poor, diaphoretic. Mouth with halitosis, together with dental pieces in a bad hygienic state, caries is evident in all the pieces, with greater impact at the level of the second and third lower left molar with apparent involvement of the soft and hard palate without alteration. In the neck, there was a painful, mobile, soft mass measuring approximately 6 by 6 centimetres. Chest: in the right lung field, there was an auscultation of pleural rubbing in the right base, an increase in frémito and abolition of vesicular murmur. Left lung field with preserved vesicular murmur.

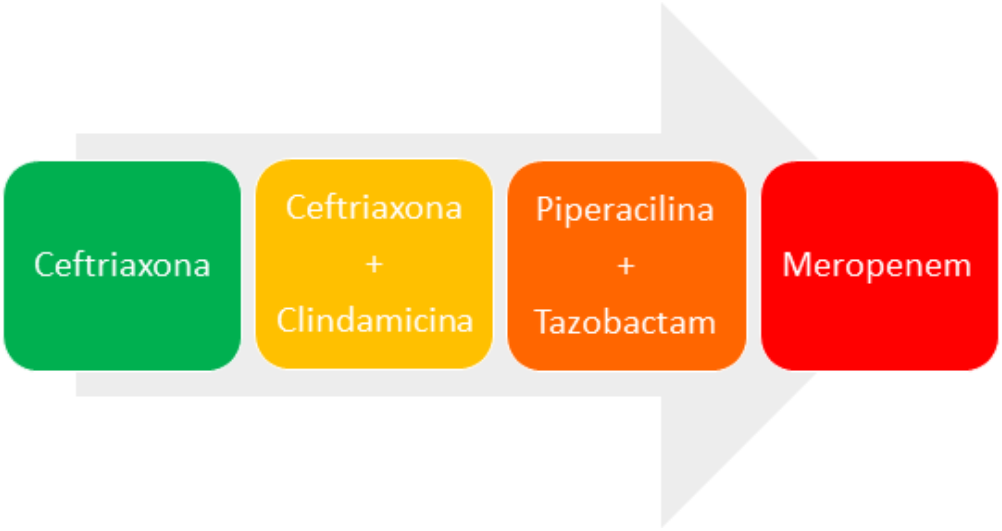
EVOLUTION

Patient with the aforementioned history was admitted with a diagnosis of pneumonia and neck abscess; antibiotic therapy was started with Ceftriaxone and Clindamycin, in addition to the administration of oxygen through nasal prongs at 2 litres. The patient remained algic, with crepitant rales at the level of the right lung base, febrile and with oedema of the lower limbs. Three days after admission, the symptoms intensified, with the patient in poor general condition, hypotensive and tachypneic. Paraclinical tests showed leukocytosis (15170), neutrophilia (88) and a CRP of 38.

The condition worsened with poor response to fluids and oxygen therapy, so it was decided to rotate to broad-spectrum antibiotics (Vancomycin and Piperacillin Tazobactam), and start vasoactive support (norepinephrine at 6 ml/h). The patient continued to eliminate a large quantity of foul-smelling, purulent and foul-smelling sputum, especially at the level of the left third molar, so he was assessed by the Dentistry Department, who proceeded to extract 4 dental pieces, on suspicion of possible causes of the site of origin of the purulent sputum. However, the patient continued to eliminate abundant purulent secretion.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

Figure 1: Evolution of Antibiotic Use.



Prepared by: The Authors

On the fifth day, drainage was performed by right thoracentesis, obtaining 1500 millilitres of purulent liquid and a slight improvement in the patient's respiratory and pain symptoms. Samples were sent for study, with suspicion of right pleural empyema.

Paraclinical tests continued to show an increase in leukocytes (17470), with neutrophilia (86%), LDH of 499 and CRP of 23.4, so it was decided to again perform chest drainage without debit. It was decided to rotate antibiotic therapy based on Meropenem, and to perform head, neck and chest CT scans (these took a long time to perform due to the lack of this resource and the difficult location of the hospital). The studies revealed: necrotic descending mediastinitis with multiple collections with gas/liquid level (predominantly upper, middle and posterior mediastinum); right pleural empyema septated until it occupied almost the entire right lung, approximately at the level of T3; and submandibular abscess communicating with the parapharyngeal, pharyngo-mucosal, visceral and retropharyngeal space, predominantly on the left side. The patient and family were informed of the pathology and the difficulty of treatment in a basic public hospital, so they decided to request medical discharge and take the patient to a more complex private unit. The results obtained in the blood biometry, blood chemistry and pleural fluid study, together with the tomographic images, can be found at the end of the bibliographic references.

DISCUSSION

In a retrospective study conducted by Salom. S., et. al. identified 11 patients with deep neck abscess, where the presentation is predominantly male, with an average age of 53 years. The initial symptom was odynophagia, followed by cervical pain, fever and cervical oedema, which corresponds to the presentation of our patient. In this study, four participants had an odontogenic infection as their origin, and their risk factors were chronic alcoholism, smoking and obesity, which is consistent with the case presented, with the addition in this case of poor oral hygiene. The first and established antibiotics of choice were amoxicillin + clavulanic acid, followed by ceftriaxone and clindamycin, and in 2 cases piperacillin/tazobactam due to the condition and extent of the infection. Of the 11 patients, 3 presented serious complications, with pneumonia and pleural effusion being the initial ones, with consequent descending mediastinitis and finally sepsis; however, these patients did not end in death due to adequate and timely intervention, as well as a timely tomographic study that serves not only to identify the compromised space but is also the guide to establish whether the patient needs to maintain conservative treatment based on antibiotic therapy or if an abscess drainage should be added to this (12). In comparison with the case presented, we can see that there are great similarities, such as the use of similar antibiotics and the characteristics of the patients themselves.

In a 25-year retrospective study conducted in Spain by Sanz. C. and Morales. C., 33 cases were presented, of which the most frequent complication was descending necrotising mediastinitis due to the relationship between the retropharyngeal space and the posterior mediastinum; in this study the age of presentation ranged from 40 to 60 years, corresponding to the age of the patient presented in our case. The previous presence of an abscess in the submandibular space was one, which spread to the retropharyngeal space and later disseminated inferiorly; it should be noted that the presentation of this type of pathology is rare, being even more difficult to detect and present those that start in the submandibular space with its subsequent extension, which ratifies to a certain extent the treatment and the wait for a change of antibiotic therapy in our patient. In this study the mean CRP was 10 mg/dl, compared to our case where the mean CRP was 31 mg/dl (13).

A clinical case from a hospital in Cameroon, reported in 2018, describes a 35-year-old male patient and a 32-year-old female patient, originally from a region of Cameroon, who presented with submandibular oedema that was fluctuant and

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

soft on palpation. The patient presented a history of a dental infection 1 month ago, at the level of the second and third molars without treatment. The second patient presented a history of being infected with the acquired immunodeficiency virus and a 1-week-old infection at the level of the second and third molars. Physical examination revealed tachycardia and hyperpyrexia. A neck ultrasound was performed, showing submandibular collections. A chest X-ray was performed, confirming a thoracic empyema. Both patients underwent drainage of the neck abscesses and placement of a chest tube, with significant drainage of purulent fluid, which coincided with the case presented, where drainage was also performed and a large amount of purulent fluid was obtained. In addition, both patients were admitted to the intensive care unit with administration of antibiotic therapy according to their respective culture and antibiogram results. The first patient had a satisfactory response to treatment and was discharged within 4 weeks of admission. The second patient, due to the presence of human immunodeficiency virus infection, died on the 5th day (14).

One of the clinical diagnoses that the patient may consider is Ludwig's Angina, which is a diffuse cellulitis of the submandibular, sublingual and submental space, characterised by its rapid spread to adjacent tissues. One of the elements to watch out for are dental infections, especially of the second and third molars. This pathology is commonly polymicrobial and is related to the normal flora of the oral cavity. It is usually associated with Streptococcus viridans, anaerobes, fusobacterium nucleatum, actinomyces and pepto-streptococci. Other findings on physical examination include "woody" induration with crepitus, along with an erythematous floor of the mouth. Timely diagnosis and treatment of this pathology is of vital importance due to the long list of complications that can occur, which include airway obstruction, internal jugular vein thrombophlebitis, mediastinitis, necrotising fasciitis, empyema, pericardial effusion, osteomyelitis, subphrenic abscess, aspiration pneumonia and pleural effusion. Práctically, this infectious disease is potentially lethal, with a mortality of 8%. In general, Ludwig's angina originates from a dental infection, a penetrating injury to the floor of the mouth, osteomyelitis or mandibular fracture, otitis media, tongue piercing, sialadenitis (infection of the salivary glands). In a 2017 case from a hospital in Ohio, a 54-year-old female patient was reported who presented with this pathology after a molar fracture. In this case, based on the clinical history and laboratory and imaging tests, the diagnosis of this pathology was reached; therefore, broad-spectrum medication was administered for management (Piperacillin/tazobactam, cefotaxime) and methylpŕednisolone; subsequently upon discharge, amoxicillin + clavulanic acid was administered for the treatment of this patient for 7 more days (15). In another clinical case reported in 2019, they mention a similar treatment, in a 33-year-old male patient, non-smoker, who presented a similar picture; although, his treatment duration was extended due to complications, such as a multiloculated empyema, where a recombinant tissue plasminogen activator was administered and a chest tube was placed for the management of this patient (16). In the clinical case presented, we decided to treat the patient with 3rd generation cephalosporins (ceftriaxone) and clindamycin, based on the oral bacterial aetiology, which caused the pneumonia and subsequent pleural effusion for more than 6 days. However, when no improvement was found, it was decided to rotate antibiotic therapy to Piperacillin/Tazobactam and Meropenem for the management of this aetiology. This is a reflection of the high antibiotic resistance that has been generated in recent years.

Non-surgical management includes thoracentesis and chest tube placement. Thoracentesis involves aspiration of pleural fluid through a percutaneously inserted catheter, which may be placed by ultrasound or tomography. Possible complications include haemothorax, pneumothorax, malpositioning of the catheter and bronchopleural fistula. The duration of treatment is usually no more than 7 to 10 days or when drainage is minimal. In patients who do not respond to treatment, or who require prolonged periods of chest tube presence, surgical intervention should be considered (17). In the clinical case presented, due to limited resources and lack of prompt acceptance by a more complex unit, it was decided to place a thoracentesis catheter and perform continuous drainage of the catheter.

In a case report from Sao Paolo in 2019, a 34-year-old male patient presented with a 15-day history of neck oedema, local pain and fever. 17 days earlier, he had undergone dental surgery. A CT scan of the neck, chest and abdomen showed a collection affecting the retromandibular, submandibular, parapharyngeal and mediastinal spaces, as well as bilateral pleural effusion. On admission, sepsis management was initiated with isotonic saline and broad-spectrum antibiotics (ceftriaxone, clindamycin) (18). In this clinical case, due to the absence of care of his teeth, especially lower molars 2 and 3 on the left side, it was decided to treat on the basis of oral bacterial aetiology as the cause of the clinical picture.

Patients with pleural effusion had higher mortality than those without (73.8% vs. 66.1%); and in-hospital mortality was 38.7%, at one month 43.1%, at 6 months 63%; hospital stay 17.6 days, and in ICU 7.3 days (19). In this clinical case, it was shown that the different management and the attempt to refer the patient to another health unit, which was not received, was a determining factor in the patient's death 2 days after requesting medical discharge.

In China, a 2019 study reported a case of a 41-year-old male patient with severe dental infection with maxillofacial and neck involvement admitted to a local hospital. The clinical picture evolved with dissemination of the infection to the floor of the mouth, submandibular space, neck, mediastinum; in addition, the patient was found to have dyspnoea and dysphagia. During this assessment, several specialists were consulted, including otorhinolaryngologists, intensivists and internists, where they started antibiotic therapy with vancomycin and immediate drainage of abscesses. However, despite the various treatments, the patient died of sepsis and multiple organ failure on the third day of hospitalisation (20).

Dental infections are commonly spread diseases if not treated early. Such dissemination can occur in the mediastinum, thorax, abdomen, head and neck. One of the possible consequences of such infections is pleural effusion,

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

empyema, sepsis and even death. Characteristic of the presence of this pathology is that the treatment is complicated and the consequences can lead to a very high mortality rate (20).

CONCLUSIONS

- In the case presented, the social conditions and risk factors of the patient, as well as the location of the basic hospital in Amazonia, 4 hours away from a more complex service, led to a delay in therapy and the timely performance of complementary imaging tests.
- As health professionals, we must always remember to manage patients as a team, without prioritising or minimising pathologies. Furthermore, we must be involved in the social and political sphere in order to be able to contribute to the development of new policies and infrastructures that benefit patients.
- Neck abscesses are the product of dental disorders which, if not treated immediately, are a strong predisposing factor for infections in other regions of the body through dissemination, such as the lung, mediastinum and pericardium. The different causes of empyema should be taken into account, because diagnosing the possible aetiologies of empyema can lead to a correct and more targeted management and treatment of the cause.
- The incidence of empyema as a consequence of deep neck abscess is rare but has a high mortality due to complications such as necrotising descending mediastinitis.
- Delay in diagnosis and adequate treatment defines the progression of the infection and its complications, which have an impact on immunocompromised patients and patients with social factors such as alcoholism.
- Imaging studies, although not definitive for diagnosis, provide guidance for appropriate treatment, including surgery if necessary.

BIBLIOGRAPHY

1. *Grendelmeier P, Rahman NM. What's the Score? Do Pleural Effusion Clinical Scoring Systems Help in Management of Disease?. Semin Respir Crit Care Med. 2019;40(3):394-401. doi:10.1055/s-0039-1695058*
2. *Ferreiro L, Toubes ME, San José ME, Suárez-Antelo J, Golpe A, Valdés L. Advances in pleural effusion diagnostics. Expert Rev Respir Med. 2020;14(1):51-66. doi:10.1080/17476348.2020.1684266*
3. *Aboudara M, Maldonado F. Update in the Management of Pleural Effusions. Med Clin North Am. 2019;103(3):475-485. doi:10.1016/j.mcna.2018.12.007*
4. *Ferreiro L, Porcel JM, Valdés L. Diagnosis and Management of Pleural Transudates. Diagnosis and management of pleural transudates. Arch Bronchopneumol. 2017;53(11):629-636. doi:10.1016/j.arbres.2017.04.018*
5. *Shen KR, Bribriesco A, Crabtree T, et al. The American Association for Thoracic Surgery consensus guidelines for the management of empyema. J Thorac Cardiovasc Surg. 2017;153(6):e129-e146. doi:10.1016/j.jtcvs.2017.01.030*
6. *Jany B, Welte T. Pleural Effusion in Adults-Etiology, Diagnosis, and Treatment. Dtsch Arztebl Int. 2019;116(21):377-386. doi:10.3238/arztebl.2019.0377*
7. *Feller-Kopman D, Light R. Pleural Disease. N Engl J Med. 2018;378(8):740-751. doi:10.1056/NEJMra1403503.*
8. *Beaudoin S, Gonzalez AV. Evaluation of the patient with pleural effusion. CMAJ. 2018;190(10):E291-E295. doi:10.1503/cmaj.170420*
9. *Ferreiro L, Porcel JM, Bielsa S, Toubes ME, Álvarez-Dobaño JM, Valdés L. Management of pleural infections. Expert Rev Respir Med. 2018;12(6):521-535. doi:10.1080/17476348.2018.1475234*
10. *Toledo LC, Nazario AM, Rodríguez Z. Treatment of submandibular and buccal space odontogenic abscess. Rev Cuba Otorhinolaryngology and Head and Neck Surgery. 2021;5(2):1-12.*
11. *Spini R, Arias E, Bordino L, Cohen D, Michalski J. Deep neck infections. Report of three pediatric cases. Arch Argent Pediatr. 2017; 115(5):e302-6.*
12. *Salom-Covenas C, Sanmartin-Caballero A, Porras Alonso E. Deep neck abscess. Retrospective study in five years. Rev Orl. 2019;10(1):27-34.*
13. *Sanz Sánchez CI, Morales Angulo C. Retropharyngeal Abscess. Clinical Review of Twenty-five Years. Acta Otorrinolaringol Esp [Internet]. 2021;72(2):71-9. Available from: https://doi.org/10.1016/j.otorri.2020.01.005*
14. *Alegbeleye BJ. Deep neck infection and descending mediastinitis as lethal complications of dentoalveolar infection: two rare case reports. J Med Case Rep. 2018;12(1):195. Published 2018 Jul 7. doi:10.1186/s13256-018-1724-x*
15. *Pak S, Cha D, Meyer C, Dee C, Fershko A. Ludwig's Angina. Cureus. 2017;9(8):e1588. Published 2017 Aug 21. doi:10.7759/cureus.1588*
16. *Zoumot Z, Wahla AS, Farha S. Rapidly progressive pleural effusion. Cleve Clin J Med. 2019;86(1):21-27. doi:10.3949/ccjm.86a.18067*
17. *Redden MD, Chin TY, van Driel ML. Surgical versus non-surgical management for pleural empyema. Cochrane Database Syst Rev. 2017;3(3):CD010651. Published 2017 Mar 17. doi:10.1002/14651858.CD010651.pub2*
18. *Petersen da Costa Ferreira C, Yumi Nakai M, Schmiele Namur C, Ribeiro Tenório L, Gonçalves AJ. Subphrenic abscess secondary to cervical abscess and fasciitis from dental focus: case report. J Med Case Rep. 2019;13(1):110. Published 2019 Apr 28. doi:10.1186/s13256-019-2036-5*
19. *Bateman M, Alkhatib A, John T, Parikh M, Kheir F. Pleural Effusion Outcomes in Intensive Care: Analysis of a Large Clinical Database. J Intensive Care Med. 2020;35(1):48-54. doi:10.1177/0885066619872449*
20. *Dai TG, Ran HB, Qiu YX, Xu B, Cheng JQ, Liu YK. Fatal complications in a patient with severe multi-space infections in the oral and maxillofacial head and neck regions: A case report. World J Clin Cases. 2019;7(23):4150-4156. doi:10.12998/wjcc.v7.i23.4150*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

Table 1. Blood Biometry

Leukocytes	15170
Neutrophils	88%
Lymphocytes	
Platelets	267000
Haematocrit	45%
Haemoglobin	14.6

Source: Morona Santiago Hospital

Table 2. Blood Chemistry

Glucose	103
Urea	49.50
Creatinine	0.98
PCR	38.6
Sodium	
Potassium	3.82
LDH	378
TGO	42.9
TGP	27.9
GGT	418.6
Total Protein	4,99
Albumin	2,22
Globulin	2,77

Source: Morona Santiago Hospital

Table 3. Pleural fluid study

Glucose	60.2
LDH	18931
Proteins	
Albumin	1.5

Source: Morona Santiago Hospital

Pleural fluid study

Light criteria		**Result**
Pleural LDH: 18931	Serum LDH: 378	50
Pleural proteins: 3	Serum protein: 4.99	0.6

Prepared by: The authors.

Table 5. Crops grown

Pleural fluid culture
Corynebacterium spp
Sputum cultivation
Candida albicans, Moderate gram-negative bacilli

Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 9| September 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

Illustration 1. SIMPLE THORAX TOMOGRAPHY, EVIDENCING RIGHT PLEURAL SPILL.

Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

Illustration 2. SIMPLE THORAX TOMOGRAPHY IN SAGITTAL CUT, EVIDENCING RIGHT PLEURAL SPILL WITH TABICATIONS.

Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

ILLUSTRATION 3. CT SCAN OF THE CHEST, CORONAL SECTION, SHOWING RIGHT PLEURAL EFFUSION WITH SEPTATIONS.

Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.