NOTA CLÍNICA

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Pneumomediastinum and subcutaneous emphysema in a young patient secondary to covid: a report of two cases

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Abstract:

Introduction:
Spontaneous pneumomediastinum is the presence of free air in the mediastinum without a history of chest trauma. It is an apparently benign and self-limited condition that is treated conservatively in mild cases but can lead to serious complications such as acute respiratory failure and be life-threatening. The clinical diagnosis is based on two central symptoms: chest pain and dyspnea, accompanied by a particular sign, "subcutaneous emphysema", which can be impressive in the appearance of the patient.

KEYWORDS

Spontaneous pneumomediastinum.
COVID 19 plus subcutaneous emphysema.
Pneumonia.

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PALABRAS CLAVE

Neumomediastino espontáneo.
COVID 19 más enfisema subcutáneo.
Neumonía

Neumomediastino y enfisema subcutáneo en paciente joven, secundario a covid: a propósito de dos casos

Resúmen:

Introducción:
El neumomediastino espontáneo es la presencia de aire libre en el mediastino sin antecedentes de traumatismo torácico. Es una condición aparentemente benigna y autolimitada que se trata de manera conservadora en casos leves, pero puede conducir a complicaciones graves como insuficiencia respiratoria aguda y ser potencialmente mortal. El diagnóstico clínico se basa en dos síntomas centrales: dolor torácico y disnea, acompañados de un signo particular, "enfisema subcutáneo", que puede ser impresionante en la apariencia del paciente.

GILTZA-HITZAK

Pneumomediastino espontaneoa.
COVID 19 gehi larruazalpeko enfisema.
Pneumonia

Pneumomediastinoa eta larruazalpeko enfisema paziente gaztean, bigarren mailakoa covid egoeran: bi kasuri dagokienez

Laburpena:

Sarrera:
Pneumomediastino espontaneoa mediastinoan aire zabalean egotea da, traumatismo torazikoaren aurrekaririk gabe. Egoera itxuraz onbera eta bere kabuz mugatua da, eta modu kontserbadorean tratatzen da kasu arinetan, baina konplikazio larriak eragin ditzake, hala nola arnas gutxiegitasun akutua eta heriotza eragin dezakeena. Diagnostiko klinikoa bi sintoma zentraletan oinarritzen da: toraxeko mina eta disnea, zeinu berezi batekin batera, "larruazalpeko enfisema", pazientearen itxuran ikaragarria izan daitekeena.

Introduction
Pneumomediastinum is a complication secondary to increased intraalveolar pres-sure that causes rupture of the alveolus and leakage of air from the bronchial tree into the mediastinum. This pathology is a consequence of respiratory infections that occur with an intense cough and forced Valsalva maneuvers, as in the case of coronavirus disease. Diagnosis is based on imaging tests and physical exami-nation is usually very suggestive.

Except for the development of a pneumoperi-cardium or tension pneumothorax, pneumomediastinum is a complication with a good prognosis, treated promptly and with good treatment, which is based on an-algesia and oxygen therapy.

A review of two post-covid-19 clinical cases with pneumomediastinum and subcu-taneous emphysema is carried out, information is collected with informed consent from both patients, we add laboratory and cabinet studies as well as a search for bibliographic references for analysis.

Conclusion
A characteristic of COVID-19 is coughing fits in most patients; this sign can cause spontaneous pneumomedistiano and subcutaneous emphysema. Timely treatment with oxygen therapy and frequent assessment is necessary for improvement and to avoid long-term complications. Pulmonary rehabilitation is important before starting or restarting previously performed activities.

RBCM
28-year-old male with no significant history of apparent health, who came to the clinic on 07/21/2021 due to odynophagia, chills, dry cough and headache of mild intensity 4/10 on the VAS scale, in that moment with vital signs within normality for which outpatient treatment is given.

On July 24, he continues with symptoms and reports chest tightness, for which a COVID 19 test is performed, which is positive, oxygen saturation 96%, he is managed with antibiotic therapy and oral medications at home; On August 9, with increased cough and dyspnea and with a decrease in saturation to 92%, for which he continued management at home but with oxygen therapy, he reported asthenia, adynamia and hyporexia.

On August 14, a simple phase CT of the chest was performed, reporting pneumo-mediastinum. and

cervicothoracic subcutaneous cellular emphysema in addition to coinfection secondary to covid 19, for which parenteral treatment with antibiotic therapy is started and oxygen therapy and pulmonary rehabilitation are continued, laboratory studies report leukocytosis of 14 thousand at the expense of neutrophil-ia 83%, platelets 212 thousand, Hb 15, htc 45, rest of the studies within normal limits, 10 days after treatment, the patient shows improvement in symptoms with a decrease in emphysema and systemic inflammatory response.

JHH

29-year-old male who has a history of occasional alcoholism, musical occu-pation, without further importance to the case, not vaccinated for covid-19, his ill-ness began on January 2, 2022 with dry cough, fever and general malaise for which he goes to the doctor where outpatient treatment is given and a covid test is requested, which is positive, a week later he continues with cough and dyspnea on moderate exertion, so he goes back to the doctor, more treatment is given and he is sent to his home, one week later, he presented edema in the anterior thorax and in the facial region, for which he was sent for evaluation by a specialist doctor.

That a simple CT is requested, reporting bilateral pneumonia and cervicotho-racic subcutaneous emphysema and it is decided to hospitalize, laboratories and internal environment within normality only with elevated procalcitonin each twice its normal value, is managed in the hospital with a double schedule of antibiotics and oxygen therapy, rest, pharmacological and mechanical antithrombotic measures with clinical improvement after 8 days of treatment and discharged home with pulmonary rehabilitation and gradual reduction of oxygen therapy.

Introduction

Pneumomediastinum is a complication secondary to increased in-traalveolar pressure that causes rupture of the alveolus and leakage of air from the bronchial tree into the mediastinum.

This pathology is a consequence of res-piratory infections that occur with an intense cough and forced Valsalva maneu-vers, as in the case of coronavirus disease. Diagnosis is based on imaging tests and physical examination is usually very suggestive.

With the exception of the development of a pneumopericardium or tension pneumothorax, pneumomedias-tinum is a complication with a good prognosis that is treated promptly and with good treatment, which is based on analgesia and oxygen therapy.

Clinical picture

Pneumomediastinum is a rare pathology, more rare in young patients without added pathology, this secondary to increased intraalveolar pressure, alveolar rupture and air migration that dissects the peribronchial and perivascular sheaths of the pulmonary hilum extending to the mediastinum.

In turn, in more severe cases, it can spread to the subcutaneous, endothoracic, peritoneal tissue and even to the spinal canal[2, 3, 4].

The predisposing conditions described in the literature are; asthma, interstitial lung diseases, chronic obstructive pulmonary disease, bronchiectasis, lung can-cer, among others.

The increase in intraalveolar pressure can be produced, for example, during vomiting, inhalation of toxins, intense cough, physical exercise or labor, together with bronchopulmonary infections or the ingestion of a foreign body, which can trigger pneumomediastinum.

Therefore, it is the result of a pres-sure variation between the alveolus and the pulmonary interstitium that leads to alveolar rupture. Two mechanisms are described that can create this pressure gradient: the first is the increase in intraalveolar pressure (Valsalva maneuver in-tentional), described as a precipitating factor and the second is the decrease in pressure in the perialveolar interstitial space, which is observed during an intense respiratory effort or a rapid decrease in atmospheric pressure, which have been described as predisposing factors to this mechanism pathophysiology is known as the Macklin effect[3, 4].

One of the mechanisms by which spontaneous pneumomediastinum can occur in patients with or after COVID-19 is the diffuse alveolar damage that occurs in any severe pneumonia, thanks to the fact that the alveoli are prone to rupture in severe viral pneumonia due to the fact that the virus damages the alveolar mem-brane as it infects type I and II pneumocytes[1,3] .

Clinically, the most frequent symptom is chest pain with or without irradiation, dry and persistent cough which is dyspnoea, the presence of cervical subcutaneous emphysema, odynophagia or changes in the tone of voice, asthenia, adynamia and fever, may or may not be added. alterations in capillary oxygen saturation, Hamman's sign (crepitus during auscultation in the sternal area, synchronous with the heartbeat and variable with the respiratory cycles and the position of the patient, best auscultated with the patient in left lateral decubitus) it is characteristic of this pathology, but not pathognomonic[1,3,4].

Confirmation diagnosis is made by simple chest tomography[6,7,8].

Serious conditions are pneumopericardium and tension pneumothorax, which are exceptional and require specific treatment (emergency drainage)[3,5,6].

Treatment

Pneumomediastinum is considered a process with little clinical impact and a good prognosis. Oxygen

therapy, analgesia, rest, thromboprophylaxis if necessary, and followup added to the treatment of the underlying cause are necessary.

In the aforementioned cases, coinfection is treated. It resolves completely in days or weeks depending on the severity; however, it can lead to fatal complications if it is not properly identified or treated in time[1,3,5].

Discussion

Subcutaneous emphysema and a history of intense coughing spells suggest the diagnosis of spontaneous pneumomediastinum, which is confirmed by computed tomography of the chest.

The chest X-ray is useful, however, more than half of the cases can go unnoticed; therefore, computed tomography of the chest is the most reliable imaging study for confirmation in this case. The clinical evolution of spontaneous pneumomediastinum plus subcutaneous emphysema in the aforementioned patients was good, with gradual reabsorption of air by the tissues. It has been reported that spontaneous pneumomediastinum is a self-limited benign condition, so it is sufficient in most cases. cases conservative man-agement. In both cases, the main approach was to treat pulmonary co-infection secondary to the SARS-CoV-2 virus.

In both situations, favorable results were ob-tained with a good prognosis for life and function. The exact mechanism by which spontaneous pneumomediastinum occurs during or as a sequel to SARS-CoV-2 pneumonia is still unknown.

In principle, it is considered a self-limited condition that responds favorably to conservative therapeutic measures, but the evolution of these patients should be monitored. due to the possibility of cardiovascular and respiratory complications related to pneumomediastinum.

Conclusion

A characteristic of COVID-19 is coughing fits in most patients, this sign can cause spontaneous pneumomedistiano and subcutaneous emphysema.

Clinical diagnosis, timely treatment with oxygen therapy and frequent evaluation are necessary for improvement and to avoid complications, mainly in the long term. Pulmonary rehabilitation is important before starting or restarting activities previously carried out.

Therefore, it is necessary to study more cases to know their prognostic significance and to be able to issue specific therapeutic recommenda-tions.

Conflict of interest: the authors declare that they have no conflict of interest (Figure 1).

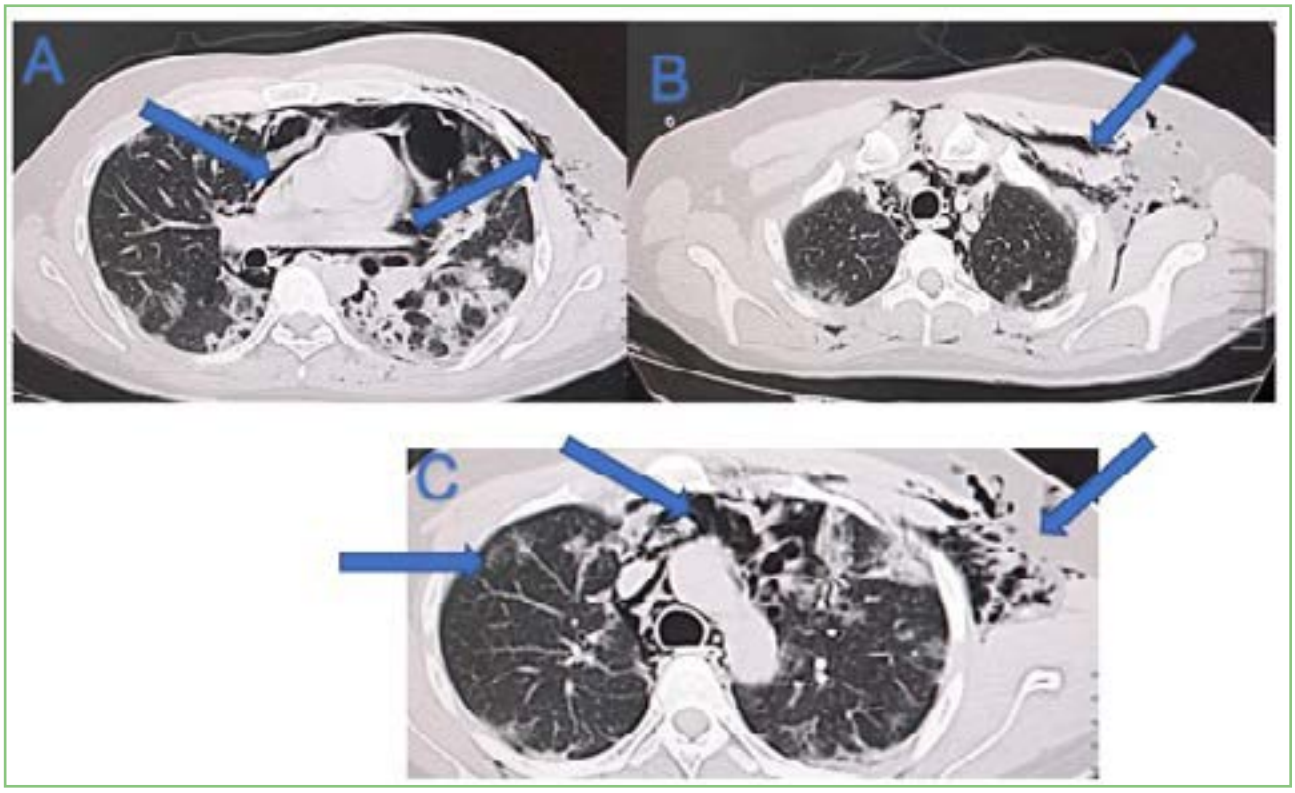

Figure 1: RBCM. A: Computed Axial Tomography of the chest at 15 days postcovid which shows pneumomediastinum and subcutaneous emphysema. B: Chest CT showing the magnitude of the subcutaneous emphysema C: Chest CT showing consolidation, pneumomediastinum as well as subcutaneous emphysema.

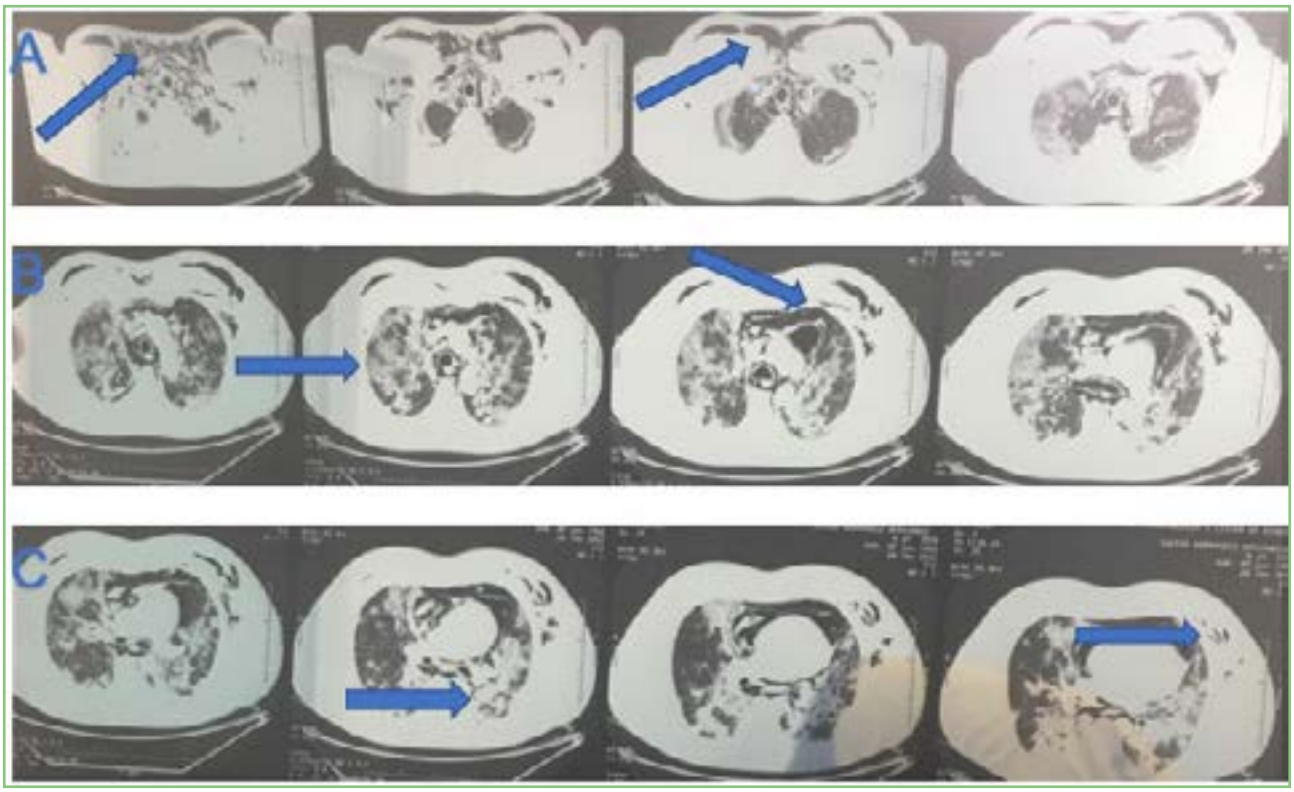

Figure 2: JHH. Computed Axial Tomography of the chest at 20 days postcovid which shows pneumomediastinum, subcutaneous emphysema and consolidation B: Chest CT showing the magnitude of pneumomediastinum and subcutaneous emphysema C: Chest CT with consolidation and pneumomediastinum.

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