Subdural empyema due to chronic rhinosinusitis

Empiema subdural por rinosinusitis crónica

To the Editor,

Subdural empyema (SE) is an infectious condition characterized by the accumulation of intracranial fluid with purulent content, located between the dura mater and the arachnoid. Its etiology is multifactorial, with sinusitis and iatrogenic factors being the most frequent causes.[1] SE may also occur as a complication secondary to the direct invasion of microorganisms into the central nervous system, such as in chronic sinusitis.[2]

We present the case of a 33-year-old man, with no relevant past medical history, who presented to the emergency department with 2 isolated episodes of vomiting associated with headache unresponsive to medication. He had been evaluated twice previously in the emergency department without improvement after discharge treatment.

On examination, he was oriented in time and space, normocolored, well hydrated, and breathing comfortably at rest, with a Glasgow Coma Scale score of 15. Neurological examination showed isochoric and normally reactive pupils, normal confrontation visual fields, and no loss of strength or sensation in upper or lower extremities. Romberg was negative, gait was preserved, and meningeal signs were absent.

Blood tests showed a C-reactive protein (CRP) > 350 mg/L with leukocytosis and neutrophilia. A procalcitonin level was subsequently obtained, revealing a value of 23.77 ng/mL. Chest radiography ruled out pneumonia, and abdominal ultrasound showed no organic cause for the symptoms. Given the laboratory results, antibiotic therapy with ceftriaxone was started.

After reevaluation, the patient developed claudication of the left upper limb, unable to maintain his arm elevated. A brain computed tomography (CT) scan was requested due to suspicion of meningitis (prior to possible lumbar puncture). CT revealed a right hemispheric subdural collection approximately 10 mm thick (Figure 1), denser in its dependent portion, consistent with an evolving subacute/chronic subdural hematoma. However, in the absence of trauma and considering the septic context, subdural empyema could not be ruled out. Metronidazole was added to cover anaerobic microorganisms.

Following drainage of the SE, microbiological analysis confirmed SE due to *Streptococcus anginosus*, originating from chronic sinusitis involving the ethmoidal air cells, frontal sinuses, and sphenoid sinus, requiring an additional surgical drainage procedure.

The most common cause of SE is acute sinusitis in 15% of cases, occurring more frequently in men and typically involving the frontal and ethmoidal sinuses.[10] Other causes include meningitis in children, otitis media, pharyngitis, dental infection, head trauma, and infected hematomas.[3,4]

Among infectious causes of SE is *Streptococcus anginosus*, a species belonging to the *Streptococcus viridans* subgroup, which includes *S. anginosus, S. constellatus*, and *S. intermedius*.[5] Regarding chronic sinusitis, an association was observed in 3–11% of hospitalized patients in a study by Mathew *et al.*, highlighting that due to its low incidence rate, a high index of suspicion is necessary when intracranial infections are accompanied by neurological symptoms and sinusitis as a prior condition.[6,7] Early diagnosis and treatment are essential, as these infections can have fatal outcomes.[6,7]

Clinically, intracranial infection spreads rapidly and may cause meningitis, focal neurological deficits, and loss of consciousness. Presentation can be highly variable, complicating diagnosis. Initial symptoms may include confusion, more commonly associated with other processes such as acute stroke.[6] Headache is

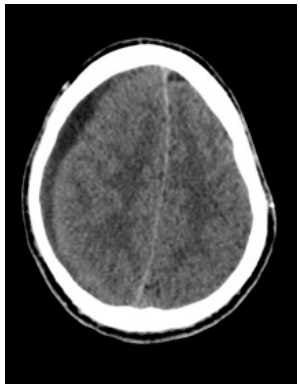

Figure 1. Subdural space collection with midline shift.

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present in up to 90% of cases, along with signs of progressing infection.[7]

What was striking in our patient was the clinical presentation, as the only symptoms from the beginning were headache—persistent despite usual analgesia during repeated emergency visits—which should have raised suspicion. This, along with vomiting without prior nausea, could have suggested an intracranial space-occupying lesion. What likely delayed diagnosis was the absence of a documented history of chronic sinusitis. Another point worth noting is the absence of fever despite laboratory findings consistent with sepsis.

Infectious SE is a rare entity,[8] and thus it is important to maintain a high level of suspicion in the presence of focal neurological signs combined with persistent headache unresponsive to usual medication. A thorough medical history is equally important to correctly identify the etiology and avoid potentially fatal complications. Although recognizing "red flags"[9] is essential, factors such as the high workload in emergency departments[10] and the support from other levels of care[11] must also be considered for optimal urgent health care.

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Patients with COVID-19 seen in a private hospital in Spain during the first pandemic wave

Pacientes con COVID-19 atendidos en un hospital privado en Spain durante la primera ola pandémica

To the Editor,

Since the beginning of the COVID-19 pandemic until December 31st, 2020, a total of 63,246 patients were hospitalized for this disease in private centers in Spain, representing 30% of all admissions. Andalusia, with 16%, was the third region with the highest number of admissions in non-public hospitals.[1]

The aim of this work is to describe the clinical and healthcare characteristics of patients with COVID-19 hospitalized in a private center in Málaga (Spain).

To do so, we conducted a retrospective observational study of SARS-CoV-2–positive patients admitted to Vithas Xanit International Hospital, Málaga, Spain, between March 4th and April 8th, 2020.

A total of 57 patients were analyzed, with the following characteristics: men (66.7%), median age 59 years (range, 34–90), and hypertension as the most frequent comorbidity (27.7%). Fever was present in 43.5%, and 10.6% developed acute respiratory distress syndrome.

All patients showed leukopenia and lymphopenia, and abnormal values of ferritin (63.4%), D-dimer (71.9%), and procalcitonin (75%). Ten patients (17.5%) were admitted to the intensive care unit (ICU), 43 (78.2%) were discharged, and 10 (18.2%) died.

All patients were treated with hydroxychloroquine, and most also received lopinavir/ritonavir (n = 40; 85.1%) and antibiotics (n = 35; 76.1%) (Table 1).

The ICU admission rate in

Table 1. Hospitalization characteristics, respiratory treatment, and patient outcomes	
Total length of stay (days) [Median (range)]	12 (3-120)
Ward stay (days) [Median (range)]	9 (0-120)
Patients admitted to ICU [n (%)]	10 (17.5)
Length of the ICU stay (days) [Median (range)]	24.5 (2-58)
Outcome [n (%)]	
Discharge	43 (78.2)
Death	10 (18.2)
Transfer	2 (3.6)
Oxygen therapy [n (%)]	21 (44.7)
Duration of therapy in days [Median (range)]	8 (1-27)
NIV [n (%)]	6 (12.8)
Duration (days) [Median (range)]	18 (8-51)
Tracheostomy [n (%)]	3 (6.7)
Duration (days) [Median (range)]	1 (1-19)

NIV: non-invasive ventilation; ICU: intensive care unit.

our cohort was higher than that reported in earlier Spanish studies (between 4.9% and 10.6%),[2-6] but similar to that observed in a later large study.[7] Mortality rates were also comparable to those described in other Spanish cohorts (between 15.7% and 21.0%).[2,4-6,9]

In most Spanish studies, hydroxychloroquine was prescribed to a high percentage of COVID-19 patients,[2,4,6-8] as occurred in our cohort.

A study conducted during the first months of the pandemic suggested that hydroxychloroquine reduced mortality in these patients,[9] but these findings were later refuted in a meta-analysis.[10] Simiarly, and consistent with our observations, the lopinavir/ritonavir combination was also frequently prescribed in most Spanish studies[4,7,8] although it was later shown not to reduce COVID-19 mortality.[11]

Overall, our findings are similar in terms of epidemiology, prognosis, and treatment to the data published in Spanish studies on COVID-19, and the slight differences observed may be due to the small sample size.

In any case, private hospitals play an important role in health care during public health emergencies, which should be considered in planning responses to future pandemic situations.[12]

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Blended learning to train emergency personnel in cardiopulmonary resuscitation

Formación semi-presencial en reanimación cardiopulmonar para profesionales de urgencias y emergencias

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To the Editor,

Simulation in health care is widely used to train emergency professionals, as it contributes to greater long-term retention of both clinical skills and teamwork abilities vs traditional learning methods.[1,2] The rapid development of technology-assisted learning methods—expanded significantly since the coronavirus (COVID-19) pandemic—has opened new alternatives for remote experiential learning,[3] known as blended learning. Within the official American Heart Association (AHA) training program in 2022, we conducted 10 courses using this hybrid learning methodology. Our objective is to describe a model of remote experiential learning in which participants care for simulated patients at a distance.

Participants connected remotely to a live simulated emergency department and provided care to simulated patients while interacting with other health care professionals physically present in the scenario. The teaching activity consisted of the following 4 steps: (1) Prebriefing session, aimed at establishing a "safe container" that would enable learners to participate actively in the simulation and display meaningful learning behaviors during the postsimulation debriefing conversations.[4] (2) Simulation: 2 participants managed the patient in each case while the rest observed. One instructor provided a brief introduction to the scenario, after which the 2 remote participants interacted with the patient and the professionals located in the simulated emergency room (Figure 1). (3) Debriefing: Instructors and learners reflected on the distance-simulation experience, with the goal of promoting assimilation and accommodation of learning for future situations. We used the "debriefing with good judgment" approach,[5] which incorporates the expert perspective of instructors while valuing the learners' reflective and individual viewpoints to explore the reasoning behind their behaviors, allowing both errors and successes to be understood. (4) Summary: At the end of each session, we worked with participants to summarize and prioritize the key learning points that could improve their practice.

Regarding outcomes, 164 professionals from 37 provinces across Spain attended the courses. All participants successfully completed official AHA advanced life support provider certification. In the post-course surveys, 98.5% reported that the course had achieved its intended objectives; 97.8% believed it had provided new knowledge; and 99.3% considered the course to be relevant to their professional activity. The teaching methodology was deemed appropriate by 93% of participants, and 98.5% stated they would recommend the course to colleagues.

The hybrid learning course format was very well received by participants. Although this model emerged during the pandemic as a way to overcome the limitations imposed by isolation, it represents an educational resource that is here to stay and opens a future full of possibilities for using distance-simulation activities as

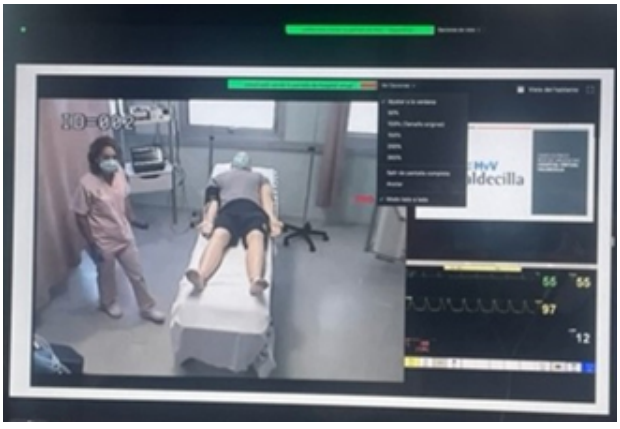

Figure 1.

an alternative or complement to traditional in-person simulation models.

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