

**A CASE REPORT: COMMUNITY-ACQUIRED STAPHYLOCOCCUS AUREUS  
MENINGITIS IN ADULTS****\*S. Nader, A. Bentahila, M. Ztoute, Omar Askander and A. Benouda**

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**ABSTRACT**

Community meningitis due to *Staphylococcus aureus* is rare but severe. Reporting the first case in Morocco to SASM. A 48-year-old diabetic patient, was admitted to intensive care at the Cheikh Zaid Hospital (HCZ) in Rabat in a state of febrile coma. A lumbar puncture was performed, the direct examination showed gram-positive cocci associated with polycythemia and the culture had allowed the isolation of *Staphylococcus aureus* susceptible to methicillin (MSSA), the patient died shortly after his arrival. This is important to think about when faced with bacterial meningitis with Gram-positive Cocci on direct examination in a diabetic patient.

**KEYWORDS:** Community Meningitis, *Staphylocoque aureus*, Morocco.**INTRODUCTION**

Bacterial meningitis is a medical emergency, which can be fatal or leave neurological sequels. Worldwide, its annual incidence is 4 to 6 cases per 100,000 adults (patients over 16 years old), of which the *Streptococcus pneumoniae* et *Neisseria meningitidis* are responsible for 80 percent of all cases.<sup>[1,2]</sup>

In Morocco, *Neisseria meningitidis*, *Streptococcus pneumoniae* and *Haemophilus influenzae B*, are responsible for 90% of bacterial meningitis.<sup>[10]</sup>

More rarely, methicillin-susceptible *S. aureus* (MSSA) can cause community meningitis. They are estimated at 3 cases per 10,000,000 adults.<sup>[6]</sup>

We report the first case in Morocco of SASM community meningitis received at the Cheikh Zaid International University Hospital in Rabat.

**OBSERVATION**

The patient was 48 years old, diabetic, badly followed and without surgical history, admitted to the intensive care unit of HCZ for febrile coma.

Two days before admission, he had developed an altered general condition with impaired consciousness and seizures.

On examination, the patient was in coma, without any motor deficit, Glasgow score (GCS) 11, fever 38.5°C, polypneic, SaO<sub>2</sub> 90%, BP 80/60 mmHg, tachycardia

120batt/min, capillary blood glucose 4 g/l with presence of acetone +++ in urine. In addition, there was no mucocutaneous involvement (pustules, abscesses).

Cerebral CT showed no parenchymal or vascular lesions. The abdominal CT was normal and the thoracic CT showed a pleural effusion without parenchymal involvement.

Cardiac workup: The ECG showed sinus tachycardia with a very high troponin level of 2141.260 pg/ml.

A lumbar puncture was performed and showed leukocytes at 260 elements/mm<sup>3</sup> of which 95% were PNN and a hyperproteinorachy at 3.92 g/l, a hypoglycorachy at 1g/l and a normal chlorurorachy.

Bacteriological examination of the CSF showed numerous Gram-positive cocci in clusters. The culture on blood gelatin medium and polyvitex chocolate medium allowed the isolation of a *Staphylococcus aureus* which was resistant to Penicillin G and sensitive to Cefoxitin, Gentamicin, Erythromycin, Clindamycin, Norfloxacin, Ciprofloxacin, Fusidic Acid, Cotrimoxazole, Rifampicin.

Covid19 testing in CSF and bronchial aspiration fluid by RT-PCR was negative.

The rest of the biological workup confirmed the infectious syndrome with hyperleukocytosis (30050/mm<sup>3</sup>) with PNN predominance (26000/mm<sup>3</sup>) on the NFS with an elevated CRP (389.9mg/l), an elevated procalcitonin (29.04 ng/ml).

The diagnosis of community meningitis with SASM was retained.

The patient, in addition to the reanimation measures (oxygen therapy, vascular filling, Noradrenalin to SAP), was initially put on Ceftriaxone 1g, aciclovir infusion.

The patient had worsened and died 18 hours after admission to the ICU.

## DISCUSSION

Staphylococcus aureus meningitis remains rare, accounting for less than 10% of all bacterial meningitis. The majority of these cases are secondary to neurosurgical interventions and are generally caused by methicillin-resistant *S. aureus* (MRSA). Thus, 81 cases of Staphylococcus aureus meningitis, including nosocomial and community-acquired, have been reported in the literature over a period of up to 23 years at the level of an entire country.<sup>[3,4]</sup>

We report a case of SASM community meningitis for the first time in 18 years at the HCZ of Rabat. In reviewing the various cases reports in the literature, only three studies reported community-acquired MSSA infections. The first study recorded ten cases over eight years in a hospital,<sup>[5]</sup> the second reported nine cases in the Netherlands, which corresponds to 3 cases per 10,000,000 adults.<sup>[6]</sup> and the last one, in Limoge, reported 5 cases in 18 months.<sup>[7]</sup>

Notre patient est relativement jeune (48ans) en comparaison à la moyenne d'âge d'une étude effectuée à l'hôpital de Limoge qui était de 62 ans,<sup>[7]</sup> et une à Amsterdam qui était de 57 ans.<sup>[6]</sup>

Among the risk factors is diabetes. Our patient was a badly followed diabetic. Cancer, intravenous drug-abuse and cardiovascular pathologies have often been described as risk factors.<sup>[8,9]</sup>

In a Dutch study the clinical signs on admission were fever and coma, this was the case for our patient.<sup>[6]</sup>

The patient has presented a meningitis with pulmonary and cardiac involvement. This extra-neuromeningeal involvement has been reported in other studies, with a more frequent cardiac damage.<sup>[6]</sup>

No portal entry was identified, which seems atypical compared to cases reported in the literature.<sup>[7]</sup>

The CSF study in our patient was in agreement with the literature and had objectified a polycytosis with PNN, as well as hyperproteinorachia and hypoglycorachia.<sup>[6,7]</sup>

Both direct examination and culture were positive, which is not the case in other studies. Thus, many authors find

staphylococcus on direct examination in less than 50% of cases, whereas culture is positive in more than 70%.<sup>[4,8,13]</sup>

Blood culture was not performed in our patient, but it has been described as a very sensitive diagnosis tool since it was always positive in Staphylococcus aureus meningitis and allowed to make the diagnosis.<sup>[6,7]</sup>

The search for the virulence factor, TSST-1, by molecular biology has not been performed, which could be involved in the toxic shock syndrome that can cause severe signs and dissemination of the infection.<sup>[14]</sup>

The patient had received a probabilistic treatment, ceftriaxone + aciclovir, which could not be adapted, given the clinical evolution.

The prognosis of this pathology remains serious, as shown in the literature, and it is even more serious when there is cardiac involvement.<sup>[11,12]</sup> In our patient, the cardiac damage and the delay of the management were the two factors of bad prognostic.

Our patient died 18 hours after his admission and 3 days after the alteration of the general state by multi-visceral failure. In a Dutch study, death occurred in 67% of cases and between 2 and 27 days after admission due to septic shock, myocardial infarction, respiratory distress and multiple organ failure.<sup>[6]</sup>

## CONCLUSION

Community bacterial meningitis caused by Staphylococcus aureus is a very rare disease for which rapid management determines the outcome.

It is important to consider it in patients with risk factors such as diabetes and in the presence of extra-neuromeningeal, cardiac and pleuropulmonary disorders.

In Morocco, compulsory health insurance is being introduced, which will greatly contribute to the rapid management of patients.

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