

# Atypical clinical presentation of meningococcal meningitis: a case report

Ilaria Izzo<sup>1</sup>, Paola Pileri<sup>2</sup>, Maria Merello<sup>3</sup>, Paolo Gnesin<sup>4</sup>, Enrico Cogi<sup>4</sup>, Carlo Aggiusti<sup>5</sup>, Laura Giacomelli<sup>5</sup>, Stefano Ettori<sup>5</sup>, Paolo Colombini<sup>5</sup>, Andrea Collidà<sup>6</sup>

<sup>1</sup>Dipartimento di Malattie Infettive e Tropicali, ASST Spedali Civili, Brescia, Italy;

<sup>2</sup>Scuola di Specializzazione in Medicina Interna, Università di Brescia, Brescia, Italy;

<sup>3</sup>UO Neurologia, ASST Franciacorta, Chiari, Brescia, Italy;

<sup>4</sup>Servizio di Anestesia e Rianimazione, ASST Franciacorta, Chiari, Brescia, Italy;

<sup>5</sup>UO Medicina Generale, ASST Franciacorta, Chiari, Brescia, Italy;

<sup>6</sup>Dipartimento di Emergenza e Accettazione, ASST Franciacorta, Chiari, Brescia, Italy

## SUMMARY

A young woman was examined in the Emergency Department for fever, pharyngitis and widespread petechial rash. Physical examination, including neurological evaluation, did not show any other abnormalities. Chest X-ray was negative. Blood exams showed leukocytosis and CPR 20 mg/dL (nv <0.5 mg/dL). On the basis of these results and petechial rash evidence, lumbar puncture was performed. CSF was opalescent; physico-chemical examination showed: total proteins 2.8 (nv 0.15-0.45), glucose 5 (nv 59-80), WBC 7600/ $\mu$ L (nv 0-4/ $\mu$ L). In the hypothesis of meningococcal meningitis, antimicrobial therapy was started. Blood

and cerebrospinal fluid cultures were positive for *N. meningitidis*. During the first hours the patient experienced hallucinations and mild psychomotor agitation, making a spontaneous recovery. A brain MRI showed minimal extra-axial inflammatory exudates. She was discharged after 10 days in good condition. We underline the need to consider meningococcal meningitis diagnosis when any suggestive symptom or sign is present, even in the absence of the classic meningitis triad, to obtain earlier diagnosis and an improved prognosis.

*Keywords:* N. meningitidis, meningitis, petechial rash.

## INTRODUCTION

*Neisseria meningitidis* is the leading cause of bacterial meningitis in children and young adults, with an overall mortality rate of 13%, and it is the second most common cause of community-acquired adult bacterial meningitis [1]. A monocentric study conducted in Northern Italy between 1989 and 1998 collected 50 cases of bacterial meningitis, and above them 20% were due to *N. meningitidis* [2]. Similarly, a multicentric study from Tuscany recorded 30 meningococcal meningitis among 197 bacterial meningitis (15.2%)

between 1999 and 2004 [3]. The typical initial presentation of meningitis due to *N. meningitidis* consists of the sudden onset of fever, nausea, vomiting, headache, decreased ability to concentrate, and myalgias in an otherwise healthy patient. In an observational cohort study the classic meningitis triad (fever, neck stiffness, and altered mental status) was present in 27% of patients with meningococcal meningitis [4, 5]. More than 50% of patients presents with rash, which sometimes evolves from non-specific to petechial to hemorrhagic over several hours [6]. The disease can result in severe sequelae, which include cerebral lesions, hearing loss, learning difficulties and severe cognitive deficits, cerebral palsy or epilepsy [6]. 5-10% of patients, even when treated, die in 48 hours after the onset of symptoms, in particular when *purpura fulminans* is present [7].

Corresponding author

Ilaria Izzo

E-mail: izzo.ilaria@hotmail.it

## ■ CASE REPORT

Here we report the case of a young healthy woman, who was examined in the Emergency Department for fever, frontal headache and widespread petechial rash (Figure 1). She was 40 years old, she worked as a teacher in primary school, she did not take any chronic therapy. In the previous days she complained sore throat and mild fever. At admission her vital signs were as follows:

temperature 37.5°C, pulse 90 beats/min, blood pressure 110/60 mmHg and oxygen saturation 99% in room air. Chest, abdomen and heart examinations did not show any abnormalities and neurological evaluation did not reveal neck stiffness, altered mental status or other alterations. Chest X-ray was negative. Blood exams were performed, in order to exclude iatrogenic thrombocytopenia (acetylsalicylic acid taken for fever). They showed leukocytosis (WBC 20000/

**Figure 1** - Widespread petechial rash.



**Figure 2** - Minimal extra-axial inflammatory exudate as areas of restricted diffusion in diffusion-weighted images and mild hyperintensity in FLAIR weighted images.

mm<sup>3</sup>), normal platelets count, CPR 20 mg/dL (normal value <0.5 mg/dL) and INR 1.45. An infectious disease specialist was consulted. Brain CT was performed and it did not show any abnormalities, desametasone 8 mg plus ceftriaxone 2 g were infused. On the basis of blood exams results and petechial rash evidence, diagnostic lumbar puncture was performed. Cerebrospinal fluid was opalescent and chemical-physical exam showed: total proteins 2.8 (0.15-0.45), glucose 5 (59-80), WBC 7600/mm<sup>3</sup> supporting the hypothesis of bacterial meningitis. Soluble antigens were negative, but in the suspect of meningococcal infection, the patient was admitted to ward and started antimicrobial therapy (ceftriaxone 2 g bid i.v.). The next day blood and cerebrospinal fluid culture resulted as positive for *N. meningitidis*. During the very first hours of her hospitalization the patient experienced hallucinations and mild psychomotor agitation that spontaneously recovered. A brain MRI showed minimal extra-axial inflammatory exudate as areas of restricted diffusion in diffusion-weighted images and mild hyperintensity in FLAIR weighted images (Figure 2). She was treated with ceftriaxone 4 g/die for ten days and was discharged after treatment completion, in good health conditions, without any sequelae. At discharge, blood exams were as follows: WBC 10390, CPR 3.16 mg/dL.

## ■ DISCUSSION

Meningococcal disease is a rapidly evolving illness, requiring urgent treatment. Patients with fulminant illness will be critically ill within the first 24 hours, leaving a very narrow window of opportunity to deliver treatment. The classic

meningitis triad occurs in less than 30% of cases, when rash is added to the classical triad, about 90% of present 2 of 4 signs [5].

In the reported case, the patient presented as only symptoms petechiae and fever, without altered mental status or neck stiffness. We underline the need of considering meningococcal meningitis diagnosis when symptoms or signs suggestive for it are present, even if the classic meningitis triad is absent, in order to obtain an earlier diagnosis and improve the patient prognosis.

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