



The Corner

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30. Multisystem inflammatory syndrome in children (MIS-C) in the ED

Resident: Good afternoon, Dr. Cooper, I would like to discuss a patient with you.

Attending: Of course, Amy, whatever you need.

Resident: I have just seen a 10-year-old boy, with no previous medical history, presenting with fever which started four days ago, acute abdominal pain since then, and newly onset headache and one vomit today. He hasn't had diarrhoea, cough, rhinitis, or any other symptoms. I'm a bit concerned because he doesn't look well.

Attending: Okay, I'll go and take a look at him for you, but first tell me, what are you thinking about?

Resident: On physical examination he is pale and looks unwell. He presents a mild rash on his chest, and a bit of conjunctival hyperemia. He's tachycardic at 130 bpm, with normal arterial pressure, and has no signs of intracranial hypertension. I think these signs could be consistent with MIS-C, since we have had a few similar cases recently.

Attending: Alright, has he been diagnosed with COVID-19?

Resident: No, I have just asked for an antigen test.

Attending: Very well. Before we go and take a look, have you thought of any other differential diagnosis?

Resident: We could think of acute appendicitis, although the pain is diffuse and patient has no muscle guarding and no rebound tenderness. However, we could order an abdominal ultrasound to rule out the diagnosis. He could also have bacterial sepsis, or toxic shock syndrome because of the rash, so I would consider performing a complete blood test, microbiological tests and starting antibiotics. Finally, Kawasaki disease would also be included in the differential diagnosis, although he doesn't meet all the criteria, his lips, oral mucosa and extremities are normal and he has no lymphadenopathies. Nonetheless, we shouldn't forget about incomplete Kawasaki disease.

Attending: All that makes sense. Let's go and take a look at the patient, and then we'll decide what to do.

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Attending: I agree with you about the physical examination. Order a complete blood test, including hemogram, hepatic and renal profiles, albumin, CPR, procalcitonin, ESR, ferritin, LDH, coagulation with D-dimer, troponins and NT-pro-BNP. Also, even though he has a negative antigen test for SARS-CoV-2, let's order a PCR and serology, as well as serologies for EBV, CMV, enterovirus, and adenovirus. Leave an IV line. Don't forget about the urinalysis and EKG, and let's ask for an abdominal ultrasound just in case, since there are atypical forms of appendicitis. After we are finished with all these tests, we should call the cardiologist and get an echocardiogram to rule out myocardial dysfunction, coronary artery abnormalities, including dilation or aneurysm and pericardial effusion.

Resident: Alright, I will come and find you with the results.

Attending: Perfect, keep a close eye on him because he can rapidly develop shock. Once the cultures have been obtained, start the antibiotics.

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Resident: Dr. Cooper, the results have arrived. Bill has lymphocytopenia (900/ μ l) and thrombocytopenia (100.000/ μ L). He also has an elevated CPR of 150 mg/l and ESR of 50 mm/h, but negative procalcitonin, high liver enzymes, elevated troponin I of 20 ng/ml and elevated NT-pro-BNP of 3000 pg/ml. The urinalysis is normal, and the abdominal ultrasound shows mesenteric adenitis with normal appendix. The EKG is normal and the cardiologist is examining him right now.

Attending: With these findings we can rule out appendicitis, and Kawasaki disease. With a negative procalcitonin, MIS-C is more likely than bacterial sepsis, but we should keep the antibiotics until we get the cultures back. What about the rest of the treatment?

Resident: I have already started him on cefotaxime and vancomycin, as well as clindamycin because of his rash. I would also start him on intravenous immune globulin at 2 g/kg, low dose aspirin, and depending on the cardiac involvement, methylprednisolone.

Attending: Great, once the cardiologist is done come and tell me. Meanwhile, please arrange the hospital admission.

KEY WORDS

Multisystem inflammatory syndrome in children (MIS-C): síndrome inflamatorio multisistémico pediátrico (SIM-PedS).

Rhinitis: rinitis.

Concerned: preocupado/a.

Conjunctival hyperemia: hiperemia conjuntival.

Intracranial hypertension: hipertensión intracraneal.

Consistent with: compatible con.

Antigen test: test de antígeno.

Differential diagnosis: diagnóstico diferencial.

Muscle guarding: defensa muscular (abdominal).

Rebound tenderness: signo del rebote (signo de Blumberg).

Abdominal ultrasound: ecografía abdominal.

Criteria: criterios.

CPR (C-reactive protein): proteína C reactiva (PCR).

ESR (erythrocyte sedimentation rate): velocidad de sedimentación globular (VSG).

EBV (Epstein Barr Virus): virus de Epstein Barr.

EKG (del alemán elektrokardiogramm, en inglés: electrocardiogram): electrocardiograma (ECG).

Echocardiogram: ecocardiograma.

Myocardial dysfunction: disfunción miocárdica.

Coronary artery abnormalities: anomalías coronarias.

Dilation: dilatación.

Aneurysm: aneurisma.

Pericardial effusion: derrame pericárdico.

Develop: desarrollar.

Lymphocytopenia: linfopenia.

Liver enzymes: enzimas hepáticas.

Mesenteric adenitis: adenitis mesentérica.

Intravenous immune globulin: inmunoglobulina intravenosa.

Cardiac involvement: afectación cardíaca.



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