Introduction

Sarcoidosis is a chronic, multisystemic, granulomatous disorder with an incidence of .22–.27 per 100,000 children per year. Involvement of the larynx is described less frequently, and represents .33%–2.1% of cases.1

Sarcoidosis laringea infantil: presentación de un caso clínico

La sarcoidosis es un trastorno crónico, multisistémico y granulomatoso. Femenina de 2 años con múltiples cuadros de vías respiratorias, con esteroides inhalados y sistémicos presentando respuesta parcial, reactantes de fase aguda positivos, anticuerpos negativos, además de PCR de micobacterias atípicas con Mycobacterium tuberculosis negativa. Se diagnosticó de sarcoidosis laringea por histopatología biopsia de laringe con proceso inflamatorio crónico granulomatoso con células gigantes tipo Langhans, y áreas agudizadas y ulceradas con cambios compatibles con proceso fílmico. Se inició tratamiento con gammaglobulina mensual durante 6 meses a dosis de 2 g/kg peso, Valmétrol® y metotrexate. Se decidió la inmunomodulación con gammaglobulina y con posterior uso de inmunosupresión a base de metotrexate. Actualmente broncoscopia sin evidencia de granulomas y reactantes de fase aguda negativos.

Diagnosis is established by histological evidence of non-caseous granulomas in affected tissue, as well as exclusion of other granulomatous diseases such as tuberculosis, histoplasmosis, blastomyosisis. It is characterised by the formation of non-necrotising epithelioid cell granulomas as a result of underlying immune deregulation, and there is typically multiorgan involvement.2 Laryngeal sarcoidosis, a rare extrapulmonary manifestation of sarcoidosis, occurs infrequently as a complication of complete airway obstruction.3 The estimated incidence of laryngeal involvement in patients with sarcoidosis ranges from 1% to 5%.4 Initial clinical presentation includes fever, weight loss, fatigue, bone and joint pain, anaemia, hepatomegaly and lymphadenopathy.5 In children under 5 years old, skin, eyes and joints are affected,

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whereas in older children, involvement of the lungs, lymph nodes and eyes predominates. Several treatment modalities are reported for laryngeal sarcoidosis, including systemic corticosteroids, intraleisonal corticosteroid injection, and surgical removal.

Aim: Presentation of a case of sarcoidosis in a child.

**Clinical observation**

A 2-year-old female who started with viral croup, with multiple respiratory tract symptoms, under treatment with inhaled and systemic steroids with partial response.

No significant family history, incomplete vaccination schedule and no other pathological signs.

The diagnostic approach involves a search for infectious aetiology which might predispose to an inflammatory state. General laboratory data with normal parameters, acute phase reactants ESR maximum peak of 63 mm/h, negative antibodies in addition to PCR of atypical mycobacteria with negative *Mycobacterium tuberculosis* (Table 1) and chest X-ray (Fig. 1) are requested.

During the child’s hospital stay she underwent endoscopy (Fig. 2) and laryngeal biopsy with histopathological report of chronic inflammatory granulomatous process with Langhans giant cells and acute and ulcerated areas with changes compatible with phymic process, resulting in a diagnosis of laryngeal sarcoidosis. Infectious granulomatous diseases, principally *Mycobacterium tuberculosis*, were ruled out by negative PCR. Management with monthly gamma globulin was initiated with doses of 2 g/kg body weight. Valmetrol® 3 tablets every 24 h.

Methotrexate at 15 mg/m²/SC weekly. Steroids were not used because the patient had been refractory since the onset of symptoms. Follow-up was offered with bronchoscopy with no evidence of negatively reacting granulomas. The patient continues with methotrexate management at 15 mg/m²/SC weekly, and folic acid 5 mg/24 h from Monday to Thursday.

**Discussion**

Diagnosis is based on a compatible clinical and radiographic picture, supported by histological evidence of non-caseous granulomas in affected tissue, and ruling out other granulomatous diseases. The condition is characterised by the formation of granulomas as a result of underlying immune dysregulation, and there is typically multiorgan involvement. Although early childhood sarcoidosis is manifested by the triad of skin rash, arthritis and uveitis, there are different forms of presentation in children, like our case, with signs of pulmonary involvement. FDG-PET/CT can be used to assess inflammatory activity accurately in patients with persistent symptoms and without biological inflammatory activity, especially in rare locations or when biopsy is not possible.

**Table 1**

<table>
<thead>
<tr>
<th>Studies undertaken</th>
<th>One month</th>
<th>3 months</th>
<th>6 months</th>
<th>9 months</th>
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<td>Negative</td>
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<tr>
<td>Neutrophil perinuclear antibody/Myeloperoxidase</td>
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<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Antinuclear antibody-HEp-2</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Fig. 1. Plain chest X-ray with evidence of diffuse micronodular bilateral perihilar infiltrate.

Fig. 2. Endoscopy showing multinodular oedematous laryngeal structures.
Conclusions

In this patient in particular and due to her age, immunosuppression as referred to in different management protocols was not possible. In addition, she had failed to respond to high doses of steroids; therefore immunomodulation with gamma globulin and then immunosuppression based on methotrexate were decided to maintain control of her baseline disease.

Ethical disclosures

Protection of human and animal subjects. The authors declare that neither human nor animal testing has been carried out under this research.

Confidentiality of data. The authors declare that they have complied with their work centre protocols for the publication of patient data.

Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is held by the corresponding author.

Conflict of interests

The authors have no conflict of interests to declare.

References