

Both brain and heart targeted by *Mycoplasma pneumoniae* post-infectious encephalitis in children

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Background: Mycoplasmas are the smallest self-replicating organisms most closely related to the gram-positive bacterial group that includes streptococci, bacilli, and lactobacilli. Neurological complications of *Mycoplasma pneumoniae* (MP) infection are the most frequently reported type of extrapulmonary diseases, overall in children. *Mycoplasma* encephalitis is generally classified into two categories: early-onset (para-infectious) type due to the direct infectious of SNC and late-onset (post-infectious) type, due to an immune-mediated process (indirect type). On the other hand, cardiac involvement is a rare manifestation, and it is more common in adults than in children.

Objectives: Previously we described a case of a child affected by post-infectious encephalitis and endocarditis caused by MP (1), unresponsive to specific antibiotic therapy, who improved with immunosuppressive and immunomodulatory treatment, suggesting an autoimmune-mediate mechanism for both encephalitis and endocarditis. We tried to verify if brain and valve tissues are both specific targets of MP post-infectious CNS diseases.

Materials e methods: We observed 3 consecutive children affected by MP post-infectious CNS diseases and 4 children affected by MP and other infective agents para-infectious CNS diseases. All patients underwent routinely blood tests, serume titres for common viruses and bacteria, brain MRI and Doppler echocardiographic examination.

Results: In all patients with post-infectious neurological manifestations secondary to MP infection we observed the coexistence of neurological and cardiological impairment (Fig 1 A and B).

In these patients, we observed the failure of antibiotic therapy and the efficacy of the immunosuppressive/immunomodulatory treatment, supporting the hypothesis that both encephalitis and endocarditis in these patients had an autoimmune pathogenesis. On the other hand, patients affected by para-infectious MP and other infective agents involving CNS showed no cardiological abnormalities, confirming that both brain and heart tissues are specific targets of MP post-infection disease, perhaps through a molecular mimicry mechanism.

Discussion: It is known that MP, together with group A β -haemolytic streptococci, is the major cause of paediatric striatal encephalitis. It is also known that endocarditis is another frequent complication of group A β -haemolytic streptococci infection. Mycoplasmas are very closely related to the gram-positive bacterial group, and this similarity between these two infectious agents, led us to do echocardiography on our patient, discovering endocarditis.

Conclusions: These case series suggest that in children affected by CNS encephalitis preceded, 1-2 week before, by respiratory infections is mandatory to search for MP infection and for cardiac involvement, to perform the best treatment for the patient.

Bibliography:

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Fig. 1

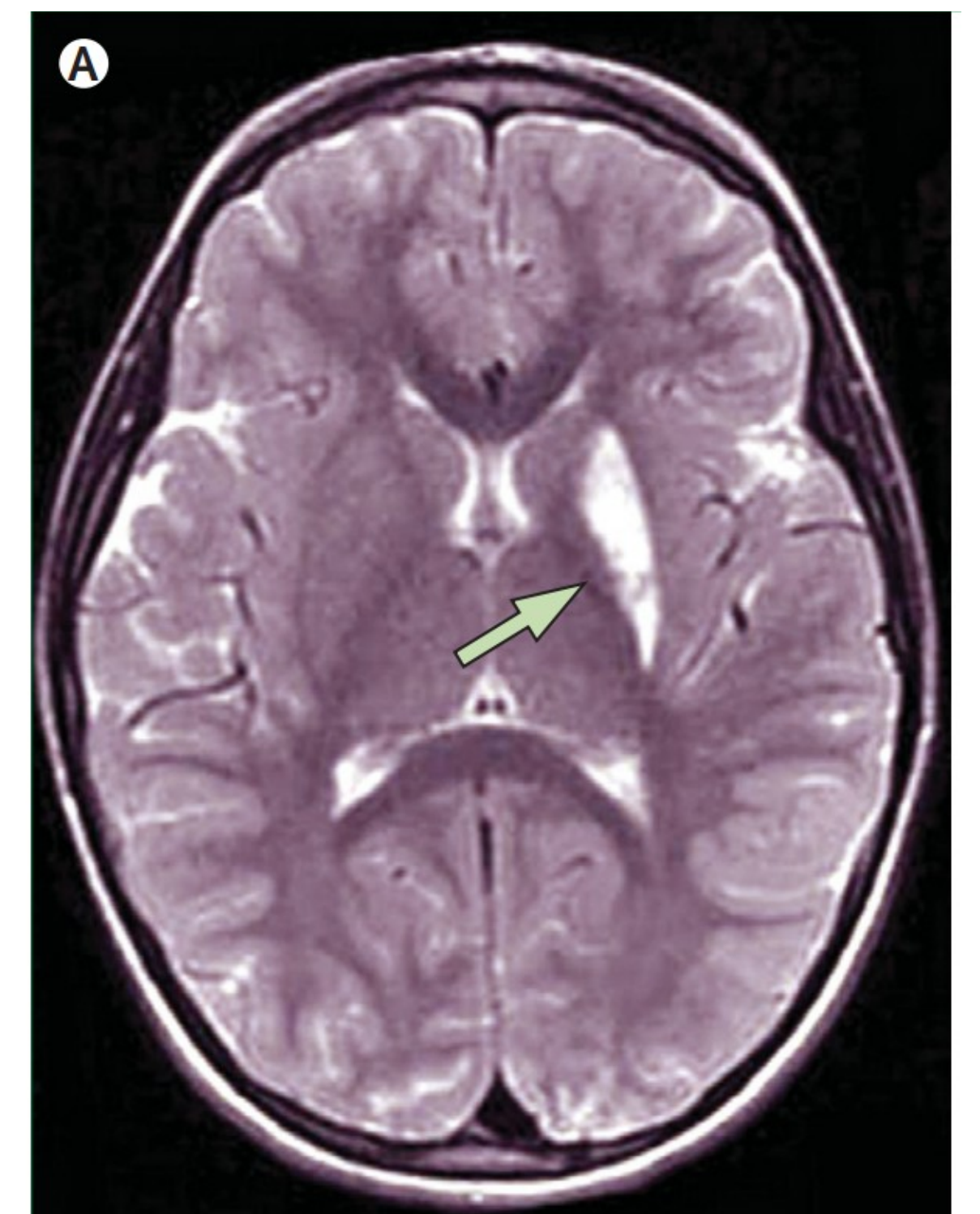


Fig 1 A. T2 weight MRI shows signal alterations in the left putamen (arrow)

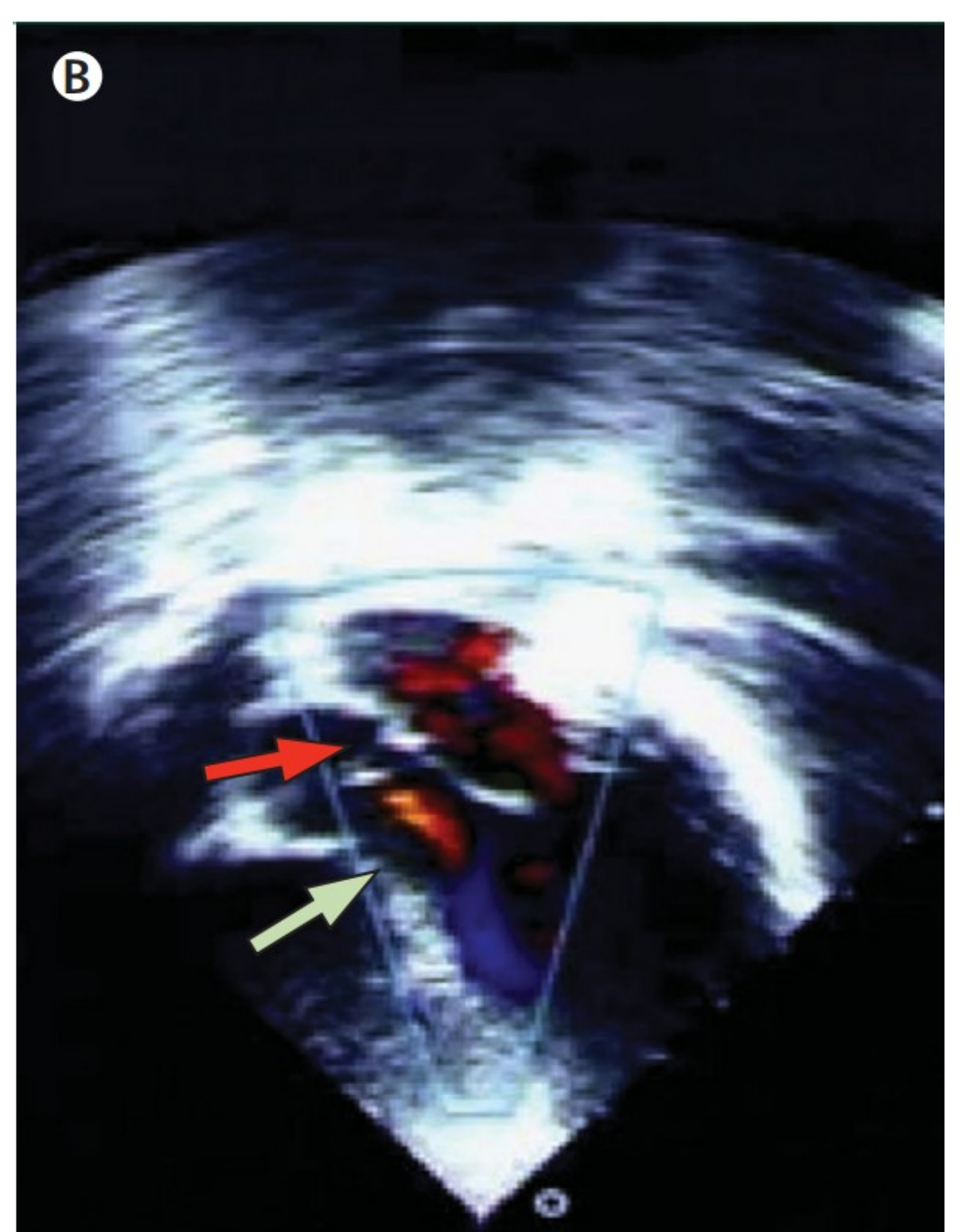


Fig 1 B. Echocardiography shows a tricuspid aortic valve with a thickened right cusp (red arrow) and mild aortic regurgitation (green arrow)