



## Leishmania interaction with an osteoclast

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### Abstract

Visceral leishmaniasis is caused by an intracellular protozoan parasite, *Leishmania donovani*. Frequently, a bone marrow aspirate can confirm the diagnosis by showing intracellular forms of *Leishmania* amastigotes in macrophages. Here we present a unusual interaction of *Leishmania* with an osteoclast in the bone marrow.

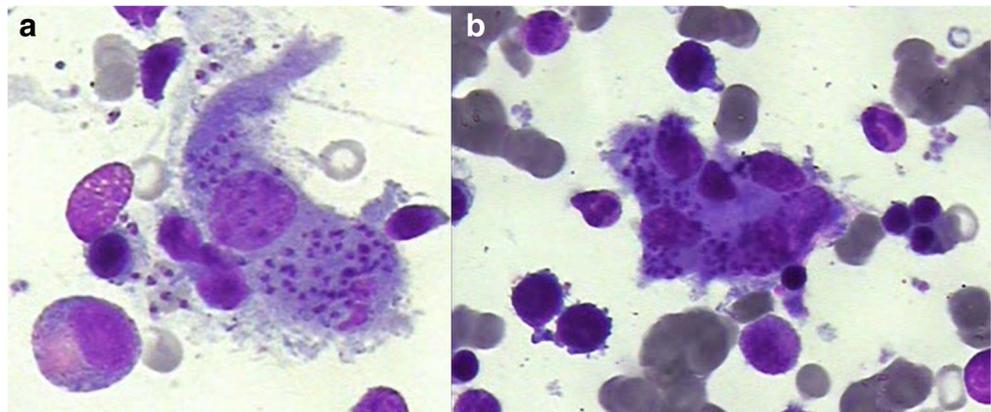
**Keywords** *Leishmania* · Bone marrow · Osteoclast · Macrophage

A 19-year old Brazilian female presented with a 2-month history of fatigue, weight loss, and daily fever. Physical examination revealed pallor and a moderately enlarged spleen. Her complete blood count results were as follows: hemoglobin, 8.5 g/dL (12–16 g/dL); white cell count,  $2.3 \times 10^3/\mu\text{L}$  ( $4\text{--}10 \times 10^3/\mu\text{L}$ ); and platelet count,  $80 \times 10^3/\mu\text{L}$  ( $140\text{--}400 \times 10^3/\mu\text{L}$ ). Serum protein electrophoresis showed hypergammaglobulinemia with a polyclonal gammopathy pattern. A bone marrow aspirate was performed and revealed

a moderate erythroid hyperplasia and dyserythropoiesis, and showed intracellular forms of *Leishmania* amastigotes in macrophages and, unexpectedly, in an osteoclast (Fig. 1).

Visceral leishmaniasis is caused by an intracellular protozoan parasite, *Leishmania donovani*, transmitted by the bite of a female phlebotomine sandfly, and affects immunocompetent patients in endemic areas, such as South America [1]. Commonly, this parasitosis involves the mononuclear phagocytic system and the macrophages are the primary resident cell

**Fig. 1** Bone marrow film showing *Leishmania donovani* bodies, with a paranuclear kinetoplast giving a characteristic “double-dot” appearance, in a macrophage (panel a) and in an osteoclast (panel b)



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for *Leishmania* [2]. Nevertheless, *Leishmania donovani* bodies were also reported in unusual locations such as myelocytes, plasma cells, and megakaryocytes [3]. In this patient, an uncommon and yet unreported interaction of *Leishmania* with an osteoclast was observed, which can be related to the fact that osteoclasts are derived from hematopoietic progenitors of the monocyte-macrophage lineage.

## Compliance with ethical standards

**Conflict of interest** The author declares that he has no conflict of interest.

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