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Picture of a microorganism

Hemophagocytic lymphohistiocytosis and disseminated toxoplasmosis after stem cell transplant

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A 67-year-old man was treated in 2022 with bortezomib, lenalidomide, dexamethasone, and autologous stem cell transplantation for multiple myeloma, and in 2023 with chemotherapy followed by allogeneic stem cell transplantation for therapy-related acute myeloid leukaemia.

At day+81, he developed severe acute graft-vs.-host disease with stage 3 skin and gastrointestinal involvement. The disease was refractory to corticosteroids and ruxolitinib but successfully treated with third-line tocilizumab. At day+129, he was treated with isavuconazole for probable invasive pulmonary aspergillosis in addition to acyclovir and amoxycillin usual prophylaxis. Sulphonamide allergy contraindicated the use of sulphamethoxazole/trimethoprim and monthly aerosolised pentamidine was used instead. At day+150, he was admitted for fever, inflammatory syndrome (C-reactive protein 43 mg/dL), and mild neutropenia (1.52×10^9 cells/L). A blood PCR for *Toxoplasma gondii* was performed due to donor-negative/recipient-positive serology, with a positive result obtained a few days later. Bone marrow biopsy confirmed disseminated infection (Fig. 1[b]). This was associated by respiratory and haemodynamic deterioration with the appearance of diffuse thoracic infiltrates (Fig. 1[a]), development of hemophagocytic lymphohistiocytosis (fever, splenomegaly, pancytopenia, cytolysis, hypofibrinogenemia (90 mg/dL), triglycerides (274 mg/dL), ferritin (>40 000 μg/L), lactate dehydrogenase (>3000 IU/L)) and cardiac injury (troponins, 11 630 ng/mL; N-terminal pro-B-type natriuretic peptide, 20 600 pg/mL). The patient died of multiorgan failure at day+180 despite prompt treatment with pyrimethamine and clindamycin plus intensive care support.

This case demonstrates disseminated toxoplasmosis with bone marrow and probably cardiopulmonary involvement. It is emphasized that inhaled pentamidine does not protect against toxoplasmosis, and the absence of cotrimoxazole prophylaxis is a major risk factor for reactivation in seropositive allogeneic transplant recipients. Weekly blood quantitative polymerase chain reaction (qPCR) screening is recommended, with closer monitoring when prophylaxis is lacking [1]. Although bone marrow biopsy remains a cornerstone in the diagnosis of hemophagocytic

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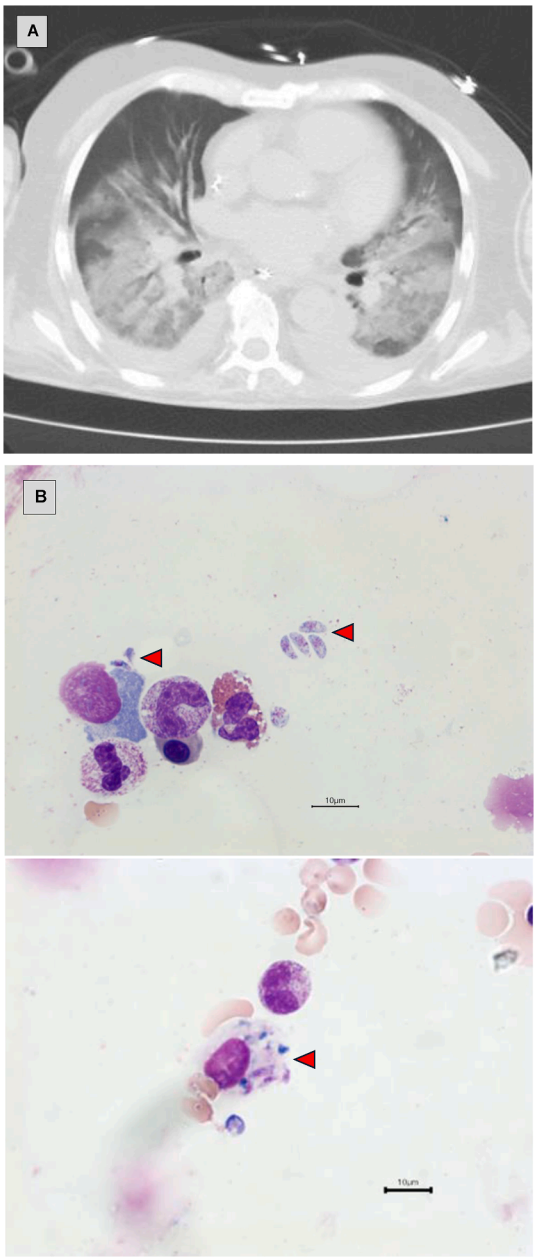

Fig. 1. (a) Thoracic computed tomography scans revealed diffuse pulmonary infiltrates. (b) A bone marrow biopsy stained with May-Grünwald Giemsa (100×) revealed predominantly extracellular *Toxoplasma gondii* tachyzoites, crescent-shaped and measuring 2 to 7 µm, occasionally clustered in small groups. One macrophage containing four tachyzoites was observed. Intracellular forms accounted for only 6% of the parasites identified.

lymphohistiocytosis, this case also underscores its value in uncovering infectious etiologies.

CRediT authorship contribution statement

Thibaut Renotte and François Dachy: Writing - Original draft preparation. Florian Belik and Gautier Detry: Conceptualisation of microscopic bone marrow biopsy images. Thibaut Renotte, Florian Belik, Gautier Detry, Elodie Collinge, Hélène Vellemans, Carlos Graux, Anne Sonet, Arnaud Robert, Aurelien Gonze, Corentin Deckers, and François Dachy: Reviewing and contributing to the clinical management of the patient.

Transparency declaration

Potential conflict of interest

The authors declare that they have no conflicts of interest.

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