Pure red cell aplasia and HIV infection: what to suspect?

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Accepted 2 April 2018

DESCRIPTION

A 15-year-old boy of black ethnicity presented with anorexia, fatigue and weight loss for 3 months. The patient's medical record included malaria infection at the age of 18 months and diagnosis of HIV infection at age 7 years treated with Tenofovir (TDF)/Emtricitabine (FTC)+ Efavirenz (EFV). The adolescent first went to a Congo's Hospitalar Unit, where antiretroviral (ART) therapy was changed to TDF/FTC+ Lopinavir (LPV)/ritonavir (r) due to elevated HIV viral load and low $CD4^+$ T lymphocytes. The compliance was irregular, and 1 month later he was admitted. The laboratory study revealed severe anaemia (haemoglobin (Hb) 4.1 g/dL), and he received multiple transfusions. Due to the absence of clinical improvement, parents brought him to Oporto's Paediatric Hospital in Portugal.

On physical examination he presented with pallor and weight loss. The rest of his physical examination findings were normal. The initial laboratory study showed normocytic normochromic anaemia (Hb 7.3 g/dL, red cell distribution width 17.3%) with reticulocytopenia (53.900/mm^3), non-specific peripheral blood smear, HIV viral load of 5210 copies/mL and $CD4^+$ T lymphocytes 98/mm^3 (3.52%). Biochemical markers of haemolysis and renal dysfunction were absent. Foetal Hb levels were normal (<1%). Viral serologies were negative (Hepatitis A, Hepatitis B, Hepatitis C, Epstein Barr Virus, Citomegalovirus, Herpesvirus-1 and Herpesvirus-2, Syphilis, Toxoplasmosis, Schistosomiasis and Human parvovirus B19 (PVB19)). Adhesion to ART treatment was reinforced and cotrimoxazole and azithromycin prophylaxis started. Following the treatment optimisation, the adolescent presented a positive clinical evolution and was discharged at day 16, with ambulatory follow-up.

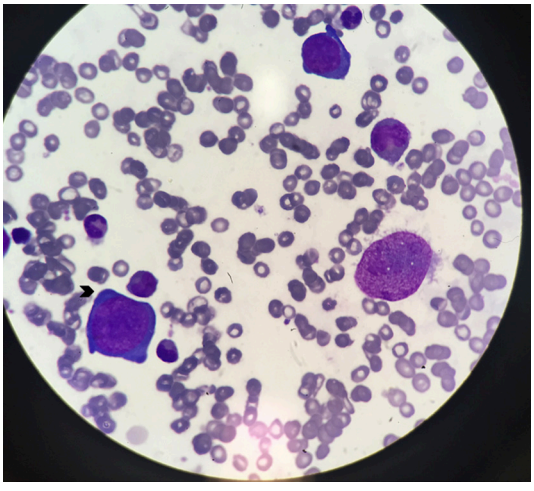

Figure 1 Bone marrow smear revealing giant proerythroblast (arrowhead) and normal proerythroblast (in right-upper quadrant).

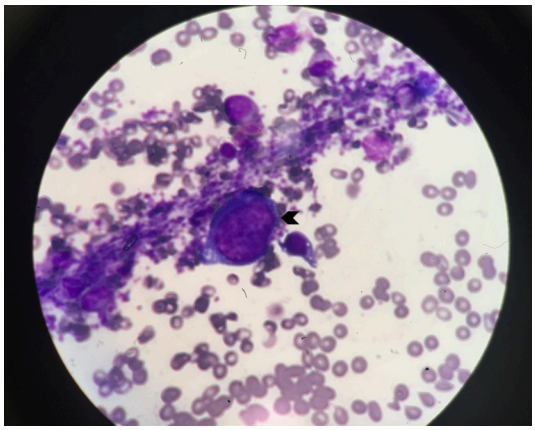

Figure 2 Bone marrow smear showing a giant proerythroblast (arrowhead), characteristic of pure red cell aplasia secondary to parvovirus B19 infection.

One month later, severe anaemia reappeared (Hb 5.3 g/dL) and he received another transfusion. Bone marrow aspiration and biopsy was performed afterwards and demonstrated pure red cell aplasia and erythroid morphological characteristics of PVB19 infection (figures 1 and 2). The other bone marrow series were not affected. The PCR for PVB19 in the serum was positive and confirmed the diagnosis. Intravenous Ig was started with favourable response.

At present time he is clinically well, his weight increased 6.5 kg, no anaemia (Hb 14.3 g/dL), HIV viral load is almost undetectable (31 copies/mL) and $CD4^+$ T lymphocytes are gradually increasing (229/mm^3).

In conclusion, anaemia is common in patients with HIV infection, particularly in advanced stages of the disease. However, other factors must be investigated as they can occur in association.[1]

PVB19 is a virus with tropism for erythroid precursors. It affects especially children and usually has a benign course. On the contrary, in the context of an infection in an immunocompromised patient, like HIV patients with erratic ART, chronic PVB19 infection cause a severe and refractory anaemia.[2] The serology can be negative, as in this patient, and PCR methods should be used. The treatment consists in ART compliance and Ig therapy.[3]

To cite: Vaz SO, Guerra IC, Freitas MI, *et al*. *BMJ Case Rep* Published Online First: [*please include* Day Month Year]. doi:10.1136/bcr-2018-224625

A good adherence to ART therapy might be challenging, particularly in adolescents. It must be continuously evaluated and stimulated since poor adherence is associated with a less effective viral suppression and increased risk of resistance to ART drugs and susceptibility to severe infectious complications as in the present case.

Learning points

- Differential diagnosis of pure red cell aplasia should include parvovirus B19 (PVB19) infection, especially in immunologically incompetent hosts, like patients with non-suppressed HIV.
- Detection of PVB19 in serum or bone marrow in the absence of IgG antibody to PVB19 establishes the diagnosis.
- Treatment with intravenous Ig and antiretroviral therapy adherence is mandatory to therapeutic success.

Acknowledgements We are deeply grateful to all of the clinicians from Centro Materno-Infantil do Norte, who were directly involved in the patient care, namely Esmeralda Cleto, MD, Emília Costa, MD, Alexandre Fernandes, MD, and Carla Teixeira, MD.

Contributors All authors contributed to the conception, design, acquisition, analysis and interpretation of data. SOV drafted and revised the article. ICG, MIF and LM revised it critically for important intellectual content. ICG, LM and SOV were involved in patient care. All authors read and gave final approval for the version to be published.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Parental/guardian consent obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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