CASE REPORT

Acute lymphocytic leukaemia and AIDS

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SUMMARY

Patients with AIDS have become more and more prevalent. Therefore, the onset of diseases that coexist with this condition must be studied in order to establish proper diagnosis and treatment. We report a case of a patient who reported with loss of strength in the lower limbs and a progressive worsening in his clinical picture. He was diagnosed with acute lymphocytic leukaemia, an unusual form of association with the AIDS condition. Despite the diagnosis, he evolved into pulmonary sepsis and so staging and chemotherapy treatment could not be performed.

BACKGROUND

There has been an important epidemiological inversion in the AIDS incidence and prevalence curves. Owing to a highly effective antiretroviral therapy and HIV prevention campaigns, there was a reduction in its incidence and a prevalence increase in the past decade. Nevertheless, in 2010, the World Health Organization (WHO) estimated 2.7 million new cases all over the world, a number that is still inaccurate.¹

This reduction is the result of programmes developed by WHO and United Nations Programme on AIDS (UNAIDS) that motivate the performance of diagnostic tests for AIDS and educational orientation on the theme, facts that make early diagnosis and treatment easier.

HIV is related to several diseases, especially neoplasias like Kaposi's sarcoma and haematological tumours. Among these tumours, non-Hodgkin's lymphomas are more prevalent and the acute lymphocytic leukaemia is rarer.²

This article aims to report the association between acute lymphocytic leukaemia and AIDS in a patient admitted in a general hospital.

CASE PRESENTATION

This is a case report of a white 37-year-old male patient from São Bernardo do Campo, São Paulo, Brazil. A married shopkeeper, he reported of low back pain that irradiated to the lower limbs with progressive worsening for the past 30 days. He had a weight loss of 4 kg during this period. He also reported unmeasured fever unrelated to any other associated symptom. The patient was a smoker (20 cigarettes/day) for 20 years and a regular alcohol consumer (one dose of liquor/day) for an imprecise period of time. Ex-marijuana and ex-cocaine user, but is clean since 5 years. He had unprotected sexual relations and his body bore several tattoos.

During the week prior to admission in the emergency department of São Bernardo County Hospital

affiliated to the ABC Medical School, he presented difficulty in walking and sitting. There was no improvement with the use of analgesics and anti-inflammatory drugs. His medical history did not show any significant epidemiological alterations.

Guided by the patient's history records, an HIV test was conducted and the result was positive. Other tests were required as shown in table 1.

Four days after his admission the patient's condition evolved to paraplegia and urinary retention, loss of lower limbs reflexes and reflex hypoactivity of upper limbs. The spine tomography showed no alterations. There was no spinal fluid collection owing to a thrombocytopenia. Moreover, with the clinical worsening of the patient, his removal for the performance of a spinal MRI was not possible.

Initial laboratory analysis showed bicytopenia that worsened throughout the period of admission. Haemotransfusion was made necessary owing to the constant decrease in haematimetric and platelet levels.

There were no alterations in the aldolase values, reticulocyte count and blood cultures. Hepatitis B serological test result was acute positive and an active lesion caused by the virus was highlighted in the diagnosis findings.

A myelogram was performed which revealed 40% cellularity with granulocytic series 10%, erythrocyte series 14%, lymphocyte series 8% and blasts 68%.

The conclusion reached was hypercellular bone marrow with reduction in megakaryocyte series and a massive blast infiltration.

The patient evolved with respiratory insufficiency and worsening of the radiological pattern. Orotracheal intubation was made necessary subsequently leading to death.

DIFFERENTIAL DIAGNOSIS

The presence of dacryocytes on the peripheral blood smear suggests myelodysplasia with hypocellular bone marrow and an increase in fatty tissue.

Bone marrow aplasia is characterised by the lack of production of young cells. The bone marrow biopsy confirms this hypothesis.

Acute leukaemia patients have a hypercellular bone marrow owing to the presence of blasts >25%. In most cases these blasts migrate to the peripheral blood. The differentiation in the neoplasia lineage is achieved through immunophenotyping. On account of the high-cellular proliferation and their migration the presence of a normal or increased white blood cell count at the moment of the diagnosis is not unusual, a fact that implies the greater seriousness of the disease and a worse prognosis.

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Table 1 Laboratory analysis

Exam	Admission	10th day	Reference
Haemoglobin (g/dL)	8.7	5.4	13.8–18g/dL
Haematocrit (%)	25.9	15.2	40–54%
White blood count	7 600	15 600	5 000–10 000
Segmentar neutrophils (%)	63	39	55–69
Lymphocytes (%)	25	43	15–30
Band neutrophils (%)	1	11	55–69
Myelocytes (%)	8	7	0
Platelets ($\times 10^3$)	34	14	150 a 450×10^3
Urea (mg/dL)	48	156	10–45 mg/dL
Creatine (mg/dL)	1.28	1.3	0.7–1.3 mg/dL
CRP(mg/dL)	203.5	268	<5 mg/dL
AST (U/L)	415	247	11–39 U/L
ALT (U/L)	58	63	8–39 U/L
GGT (U/L)	315	288	7–45 U/L
Alkaline phosphatase (U/L)	473	285	90–360 U/L

CRP, C reactive protein; GGT, γ -glutamyl transferase; ALT, alanine transferase; AST, aspartate transferase.

DISCUSSION

The two most common AIDS-related cancers are the non-Hodgkin's lymphoma and the Kaposi's sarcoma.² The presentation of acute lymphocytic leukaemia in this context is very rare.³ With a rapid evolution, its early diagnosis is important for the onset of the specific chemotherapy treatment.

Acute lymphocytic leukaemia is an aggressive haematological neoplasia derived from T-lymphocyte or B-lymphocyte cell lines. It is more common in men than in women and it is characterised by a diffuse invasion of young lymphoid cells into the bone marrow, mediastinal masses, central nervous system infiltration and a high leucocyte count.⁴

A myelogram that reveals the presence of blasts with intense basophilia and cytoplasmic vacuolation highly suggests acute lymphocytic leukaemia as described by the haematologist. The compromised central nervous system is a sign of an unfavourable prognosis.

Nevertheless, over the past years the prognosis has been improving by means of the introduction of intensive chemotherapy protocols leading to successful healing rates of nearly 75% in children and 50% in adults.⁴

In the studied case, the limitations resulting from the urgency and the clinical seriousness made the immunological diagnosis

of leukaemia difficult once the patient had an acute blood dyscrasia, a fact that compromised the bone marrow and lymph node biopsy performance. MRI of the lumbar spine to properly evaluate the crural paralysis could not be obtained owing to the clinical impossibility at the moment it was indicated.

As aforementioned, the diagnosis was made through a myelogram and the presence of a massive bone marrow blast infiltration. The tumour biomarkers research through proteomic analysis is another diagnosis method that has been used.⁵ This analysis enables an earlier evaluation of the presence of circulating young, lymphoid and myeloid cells.

Learning points

- The investigation for haematological neoplasia is paramount in the first evaluation of patients with AIDS.
- Acute lymphocytic leukaemia may manifest itself with neurological symptoms at first; mental confusion as well as motor and sensory alterations are an alert sign.
- In immunocompromised patients the coexistence with haematological neoplasia contributes to a high-risk factor for the development of sepsis.

Contributors NCPZ and DMB made the literature review and assisted the patient. MRB and JABS wrote the article and conducted the case.

Competing interests None.

Patient consent Obtained.

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