Isolated optic nerve infiltration as a site of relapse of acute lymphoblastic leukemia

Infiltration isolée du nerf optique révélant une rechute d'une leucémie aiguë lymphoblastique

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RÉSUMÉ

Introduction: L'infiltration du nerf optique est relativement rare dans la leucémie lymphoblastique aiguë.
Objectif: Nous rapportons un cas rare d'une localisation d'une leucémie aiguë lymphoblastique (LAL), au moment de la rechute, au niveau du nerf optique.
Observation : Il s'agit d'un homme de 53 ans chez qui nous avons diagnostiqué une LAL T. Le patient a été traité selon le protocole national associé à un traitement prophylactique du système nerveux central (SNC). Au cours du traitement, le patient a présenté une détérioration brutale et grave de la vision des deux yeux. L'examen du fond d'oeil et par imagerie par résonance magnétique oculaire des orbites étaient en faveur d'une infiltration du nerf optique. Une rechute extramédullaire isolée du nerf optique a été retenue. Le patient a été traité avec une chimiothérapie de sauvetage systématique et intrathécal. En attendant le début de la radiothérapie, le patient a présenté une rechute médullaire. Il est décédé par un syndrome hémorragique sévère.
Conclusion: l'infiltration leucémique du nerf optique a un pronostic sévère. L'évaluation ophtalmologique est essentielle chez les patients atteints de LAL afin de diagnostiquer une atteinte oculaire précoce et la vision du patient peut être préservée si le traitement est instauré rapidement.

Mots-clés
Leucémie aiguë lymphoblastique, rechute, infiltration leucémique, nerf optique

SUMMARY

Optic nerve infiltration is relatively rare in acute lymphoblastic leukemia. We present a case of a -53 year-old-man who was diagnosed with T- acute lymphoblastic leukemia (ALL). The patient was treated with ALL national protocol and the central nervous system (CNS) prophylactic management. On treatment, the patient presented with sudden severe vision deterioration of both eyes. Fundoscopic examination of the eye and magnetic resonance imaging of the orbits were in favor of an infiltration of the optical nerve. An isolated extramedullary relapse of the optical nerve was retained. The patient was treated with salvage chemotherapy systematic and intrathecal. Waiting forthe beginning of radiotherapy, the patient presented a bone marrow relapse. He died of a severe hemorrhagic syndrome. Conclusion: Optic nerve leukemic infiltration has a severe prognosis. Ophthalmic assessment is essential in patients with ALL in order to diagnose an early ocular involvement and the patient's vision can be preserved if treatment is initiated promptly.

Key-words
Acute lymphoblastic leukemia, relapse, leukemic infiltration, optic nerve

INTRODUCTION

Isolated optic nerve infiltration as the initial presentation of relapse of acute lymphoblastic leukemia (ALL) was rarely reported in the literature. The optic nerve had been characterized to be a pharmacologic sanctuary, relatively unaffected by systemic chemotherapy(1). Leukemic infiltration of the nerve optic would be an early diagnosis, as vision can be preserved if treatment is initiated promptly. We report a case with leukemia infiltration of the optic nerve as the initial isolated presentation of disease relapse.

OBSERVATION

A 53-year-old man was admitted to our hospital for ALLT-cell type without infiltration of the central nervous system (CSN). He received systemic chemotherapy including vincristine, l-asparaginase, daunomycin, and dexamethasone. Intrathecal methotrexate, cytarabine, and hydrocortisone were administrated for CNS prophylactic management. Complete hematologic and cytogenetic remission was achieved after induction chemotherapy. On treatment, the patient presented with sudden severe vision deterioration in both eyes. His visual acuity was 1/10 on the right eye (RE) and misguided light-perception on the left eye (LE). The examination of the anterior segment revealed mid-dilated pupil with sluggish light reflex in the LE. Fundoscopic examination showed optic disc edema with microaneurysms in the RE. In the LE, we found a vitritis with massive papilledema, microaneurysms and retinal hemorrhages extending into the periphery, with white centers (figure 1). The fluorescein angiography showed dye leakage from the disc and some focal hypofluorescence related to retinal hemorrhages in the RE. In addition, it has demonstrated a large blocking effect due to the important retinal hemorrhages and a delay of vascular filling with quite leaking fluorescein from few blood vessels in the LE. Choroidal fluorescence was normal in both eyes (figure 2).

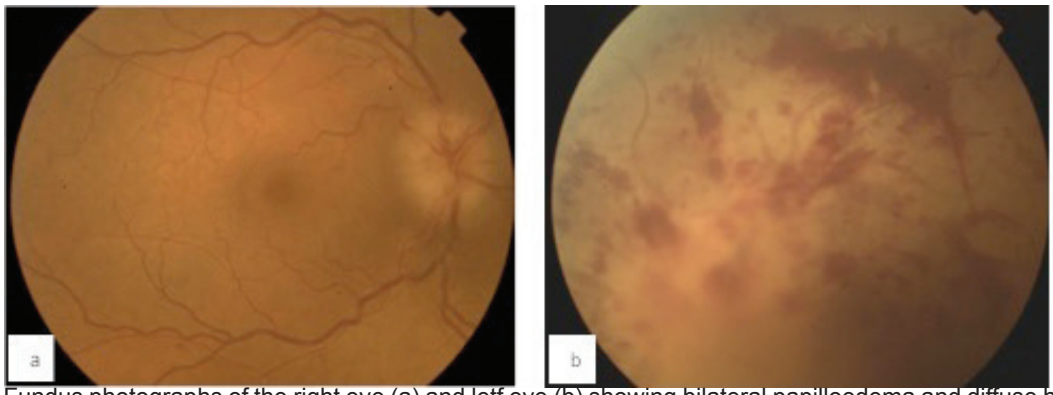

Figure 1 : Fundus photographs of the right eye (a) and letf eye (b) showing bilateral papilloedema and diffuse hemorhages in the left eye

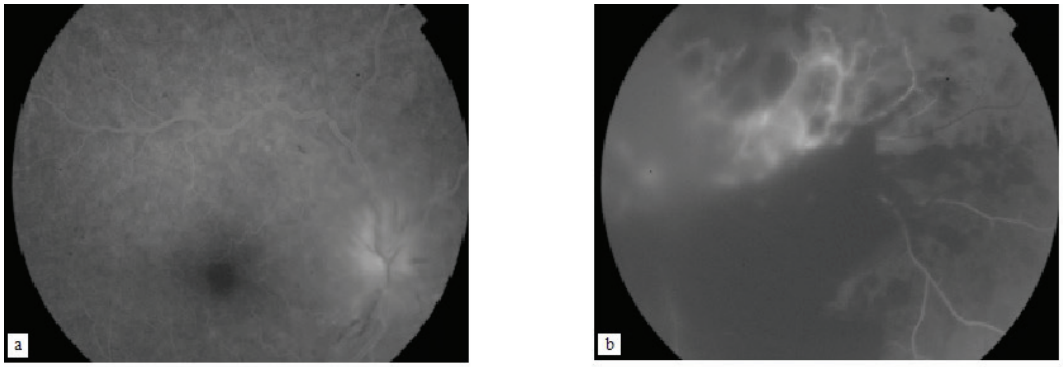

Figure 2 : Fluorescein angiogram s : diffuse dye leakage from the discand some focal hypotfluorescences related to retinal hemorrahages in the RE (aà : large blocking effect due to important retinal hemorrahage and a delay of vascular filing with a quite leaking fluorescein from few blood vessels in the LE (b)

Magnetic resonance imaging (MRI) of the orbits showed evidence of enhanced soft tissue component wrapping around the optic nerve bilaterally, compatible with leukemic infiltration (Figure 3). Bone marrow aspiration revealed a state of complete remission of leukemia. The cerebrospinal fluid (CSF) study did not find any blast. Bacterial culture, fungal culture and viral studies (cytomegalovirus, Epstein Barr and herpes virus) of CSF were negative. We diagnosed as extramedullary relapse of optic nerve infiltration. Three days after, he presented with unilateral peripheral facial nerve palsy. On account of the suspected CNS involvement of leukemia, intrathecal chemotherapy with another course of salvage chemotherapy was administered. Waiting for the beginning of radiotherapy, the patient presented a bone marrow relapse. One month after, he died of a severe hemorrhagic syndrome.

Figure 3: MRI showed soft-tissue component wrapping arround the optic nerve bilaterally, compatible with leukemic infiltration

DISCUSSION

The most common site of relapse of ALL is the bone marrow. Extramedullary relapse of ALL is rare, particularly in the eyes. Ocular localization can be found either over the orbit, the eyelid, the retina, the uveal, and the optic nerve (2). Isolated optic nerve involvement is relatively rare as an initial presentation of relapse of ALL and is considered to be one of the significant clinical findings of CNS leukemia (1). Disease relapse is presumed to be due to inadequate penetration of the antileukemic therapy to the relapsing site. Diagnosis of optic nerve involvement can be challenging, especially in the absence of other CNS involvement or systemic disease (3). Our case demonstrates the diagnostic challenges. At the diagnosis of optic nerve relapse, the patient was in medullar complete remission, CSF was normal and his MRI showed only optic nerve enhancement but no other CNS involvement. Isolated optic nerve involvement without other CNS involvement or systemic disease can be either unilateral or bilateral (4,5). Visual loss is usually severe and is frequently associated with disc swelling accompanied by retinal hemorrhage and subretinal fluid as in our patient. Leukemic infiltration of the optic nerve may cause only minimal visual symptoms, despite massive involvement. The diagnosis can be made both clinically and with further ophthalmological and radiological evaluation. Early diagnosis with treatment should be initiated before the irreversible neuronal damage occurs. As in our patient, leukemic infiltration of the optic nerve may only appear as enhancement of the optic nerve on MRI and could be easily confused with optic neuritis(4). Other investigations such as vitreous sampling and retinal and choroidal biopsy could also be considered as they can confirm the diagnosis. Although, the optic nerve biopsies are highly invasive and potentially blinding. It should be considered, especially in a blind eye, to confirm the diagnosis if required. Many reports of elusive leukemia optic nerve patients with negative MRI and CSF in the literature have advocated for optic nerve sheath fenestration for diagnosis(6). The optic nerve had been characterized to be a pharmacologic sanctuary, relatively unaffected by chemotherapy. The effect of irradiation is uncertain. However, this therapy may improve the flow of cerebrospinal fluid by reducing the number of leukemic cells. This allows the administered cytotoxic drugs to attack the leukemic cells. Curto et al suggested that high-dose radiotherapy to the eye (no less than 30 Gy) is needed for eradicating leukemic cells(7)including 38 patients (21 males, 17 females. Thus, early administration of focal radiotherapy to reduce the leukemic cell load is important for both visual(2,5). Compared with the cases that had a poor ophthalmologic prognosis, the patients with good

ophthalmologic prognostic features were considered with longer survival times (4).

CONCLUSION

Isolated optic nerve involvement can be as an initial presentation of disease recurrence in ALL. Early diagnosis is very important as the patient's vision can be preserved if treatment is initiated promptly.Treatment of leukemia optic nerve should not be delayed if typical fundus finding are present despite negative MRI and CSF investigations. Thus, periodic ophthalmic examinations should be conducted in patients with acute leukemia

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