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Case Report

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A CASE OF LEUKEMIC RETINOPATHY REVEALING CHRONIC MYELOID LEUKEMIA!

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ABSTRACT

Chronic myeloid leukemia (CML) is classified as a myeloproliferative neoplasm with an elevated granulocyte cell line. It is traditionally characterized by a three-phase progression (chronic, accelerated, and blast phases). CML can be asymptomatic and is typically detected during routine blood tests. Alternatively, it may manifest with symptoms related to anemia and splenomegaly. Retinal abnormalities as an initial presentation in CML patients are infrequent. Here, we report a case of a 40-year-old man with a non-medical history who presented retinal involvement as an initial manifestation.

INTRODUCTION

Chronic myeloid leukemia (CML) is a myeloproliferative neoplasm characterized by the presence of the BCR-ABL oncogene, resulting in increased proliferation of myeloid cell lines without compromising their capacity to differentiate. The condition follows a three-phase progression, including a chronic phase, an accelerated phase, and a blast crisis.[1] CML may present in various ways, exhibiting a range of symptoms and signs, and in some cases, it may be incidentally detected during a routine complete blood count (CBC).[2] Ophthalmic manifestations are generally considered an unusual presentation of CML, ranging from incidental findings during eye examinations to symptoms such as blurred vision and partial or total loss of vision.[3] Chronic myeloid leukemia (CML) is characterized by excessive proliferation of the granulocyte cell line, representing a myeloproliferative neoplasm.

CASE REPORT

A 40-year-old man presented to the ophthalmic emergency department with a sudden onset of bilateral eye redness and decreased visual acuity in the left eye. There is no history of associated eye pain, trauma, hypertension, or diabetes mellitus. There is no history of intake of any eye or systemic medications in the past. There was no significant family history. The clinical examination revealed a best-corrected visual acuity of 10/10 in the right eye and 8/10 in the left eye, with normal intraocular pressure in both eyes. The annex examination was normal, including the absence of exophthalmos with preserved ocular motility. Slit-lamp examination of both eyes revealed bilateral subconjunctival hemorrhage, a clear cornea, no cells in the anterior chamber, and a clear lens. A dilated fundus examination of both eyes showed tortuosity with moderate dilation of retinal veins, multiple Roth spots, scattered retinal hemorrhages, and perivascular sheathing. A general examination identified splenomegaly. The patient was advised of blood investigations. Blood investigations showed leukocytosis with a high white blood cell (WBC) count of more than 363 × 103/µL (normal range: 4–10 × 103/µL); the coagulation profile was normal. he underwent a peripheral smear, bone marrow was suggestive of CML, cytogenetics were abnormal (Philadelphia chromosome), and BCR ABL by PCR was positive (88%), which confirmed the diagnosis of CML (chronic phase). Macular SD-OCT revealed small hyper-reflective lesions in both eyes, with left eye diffuse retinal thickening. The patient received chemotherapy with imatinib. Follow-up after 1 year of treatment showed significant improvement.

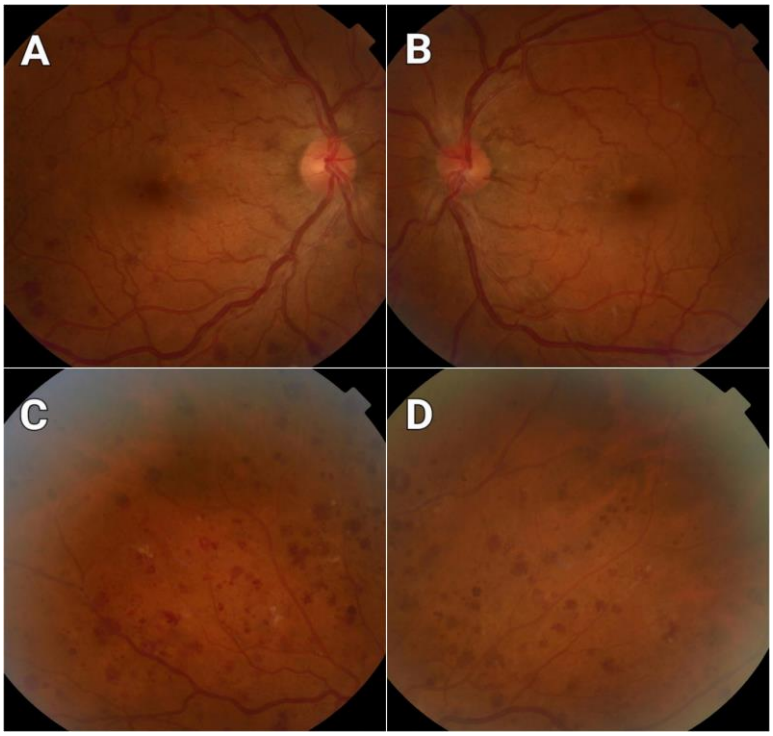

Figure 1: Fundus Photographs Showing Scattered Intraretinal Hemorrhages, Tortuosity With Moderate Dilation of Retinal Veins, Multiple Roth Spots And Perivascular Sheathing.

DISCUSSION

Ophthalmic manifestations in the initial phases of chronic myeloid leukemia (CML) are typically uncommon and rare.[3,4] However, an ophthalmologist can be the first to detect CML such as our case, with cases ranging from incidental findings during routine eye exams to instances of blurred vision or even severe visual loss. These ocular symptoms may occur before a leukemia diagnosis, in previously diagnosed patients, or during relapses.[5]

Theses ophthalmic complications may result directly from metastatic leukemic infiltrates or as a consequence of associated conditions such as anemia, thrombocytopenia, leukocytosis, hyper-viscosity syndrome, and leukoembolization.[6,7] Virtually any ocular structure can be affected, and the manifestations can range from mild dot and blot hemorrhages to advanced optic nerve infiltration.[5]

Leukemic retinopathy is the most common manifestation of posterior segment involvement. It often presents as Roth spots, which are hemorrhages that may indicate small areas of retinal leukemic infiltration. Other symptoms include cotton wool spots, leukemic infiltrates, retinal hemorrhage, intraretinal hemorrhage, subretinal hemorrhage, dilated tortuous vessels, optic disc hyperemia, yellowish-white masses of variable size, neovascularization, and retinal vascular sheathing.[5]

These observations mainly result from vascular stasis caused by an exceptionally elevated white blood cell (WBC) count.[8,9] In our case, the presence of Roth spots, retinal hemorrhages in spots, vascular tortuosity, and perivascular sheathing were noted as signs of Leukemic retinopathy.

Macular and foveal involvement has been documented on numerous occasions and can result in significant visual impairment.[5] In our case, we noted on Macular SD-OCT, small hyper-reflective lesions in both eyes, with left eye diffuse retinal thickening.

Ophthalmic manifestations can also be classified based on severity (mild, moderate, and advanced), the affected region at presentation necessitating ophthalmic intervention, and the visual prognosis.[10]

CONCLUSION

It is rare for leukemic retinopathy to be the first symptom of chronic myeloid leukemia, and it can be misdiagnosed as another type of retinopathy if not properly investigated. Therefore, it is crucial to conduct a thorough examination on any patient with retinopathy to rule out leukemia. Early treatment initiation is essential to ensure the patient's vision and life are protected.

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