Original Research Article

Retinal, optic disc changes and effect on visual acuity in Leukemia - An analytical study

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Abstract

Background: Leukemia is one of the most common malignancies in humans from childhood to elderly. Leukemia leads to frequent involvement of retina and Optic nerve head, thereby Vision loss due to increased survival rate because of improved treatment facilities available today. **Aims and objectives:** [1]To Analyse the Retinal and Optic Disc changes occurring in patients suffering from Leukemia. [2]To Analyse the effect of Leukemia on the Visual Acuity. **Materials and Methods:** This is a prospective study involving 25 patients with Retinal and Optic Disc changes due to Leukemia presented at a Tertiary Care Centre. They were subjected to routine fundus examination and Visual Acuity Assessment. A proforma was prepared with visual acuity and fundus examination details for each patient. **Observation and Results:** Haemorrhagic retinal changes is seen in all types of Leukemias. Ischemic retinal disease is common with Chronic leukemias. Leukemic infiltrates are common with Lymphoid leukemias. Decrease in Visual acuity is mainly due to macular pre-retinal haemorrhages in Acute Leukemias. **Conclusion:** Understanding of the retinal and optic nerve head manifestations in various types of Leukemias will help in proper Ophthalmic evaluation of the Leukemic patients and thereby help the treatment physician in the treatment of Leukemic patients.
Key Word: Leukemia, Heamorrhage, Ischemia, Infiltration and Defective Vision.

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INTRODUCTION

Leukemia is one of the most common malignancy in humans from childhood to elderly. Leukemia leads to Ocular morbidity and Vision loss due to increased survival rate because of improved treatment facilities available today. Most of the patients suffering from Leukemia developed manifestation of Leukemia at one -time or other during the course of their disease, with or without visual defect. Retinal and Optic disc changes in leukemia is due to Anaemia, Thrombocytopenia, Hyperviscosity of blood, Direct infiltration by neoplastic cells, Immunodeficiency, Toxicity to chemo/ Radiotherapy and Bone marrow transplant leading to Graft-versus-host disease.

AIMS AND OBJECTIVES

1. To Analyse the Retinal and Optic Disc changes occurring in patients suffering from Leukemia.
2. To Analyse the effect of Leukemia on the Visual Acuity.

Inclusion Criteria
Leukemic patients with Retinal and Optic Disc changes are taken for the analytical study.
Exclusion Criteria
Leukemic patients without Retinal or Optic Disc changes.

MATERIALS AND METHODS

In this prospective study, 50 patients diagnosed with Leukemia and presented at a Tertiary Care Centre over a period of two years were screened for Retinal and Optic Disc changes using Direct Ophthalmoscope, Indirect Ophthalmoscope and fundus photography. The 25 patients who had retinal or optic disc changes were taken for Best

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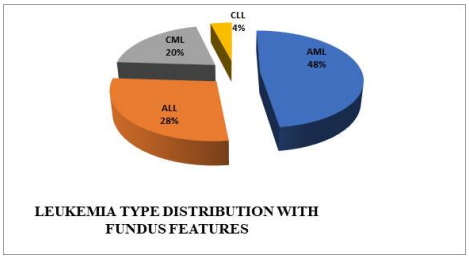
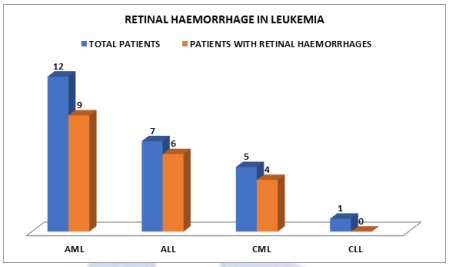
Corrected Visual Acuity Assessment. A proforma was prepared with visual acuity and retinal /optic disc changes details for each patient.

RESULTS

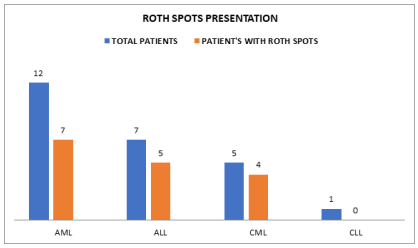
25 patients presented with retinal and/ or Optic disc changes at the time of examination. Out of the 25 patients with leukemic retinal and/ or Optic disc changes, Acute Myeloid Leukemia (AML)-12 patients, Acute Lymphoid Leukemia (ALL) -7 patients, Chronic Myeloid Leukemia(CML)-5 patients and Chronic Lymphoid Leukemia (CLL) -1 patient. Roth spots is seen 7 /12 (58.3%) in AML, 5/7 (71.4%) in ALL, 4/5 (80%) in CML and 0/1 in CLL patients. Retinal Haemorrhage is seen 9/12 (75%) in AML, 6/7 (85.71%) in ALL, 4/5 (80%) in CML and 0/1 in CLL patients. Cotton Wool Spots is seen 4/12 (33.33%) in AML, 1/7 (14.28%) in ALL, 3/5 (60%) in CML and 0/1 in CLL patients. Retinal Infiltration is seen 3/12 (25%) in AML, 2/7 (28.6%) in ALL, 0/5 in CML and 1/1 (100%) in CLL patients. Optic disc infiltration is seen 1/7 (14.3%) in ALL only. Proliferative Vitreo-retinopathy is seen 1/12 (8.33%) in AML only. Decrease in the Best Corrected visual Acuity is seen 5/12 (41.66%) in AML, 3/7 (42.85%) in ALL. Not seen in chronic leukemias.



Graph 1



Graph 2



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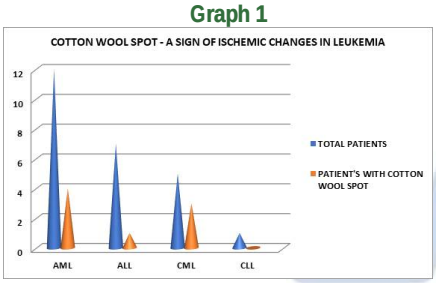

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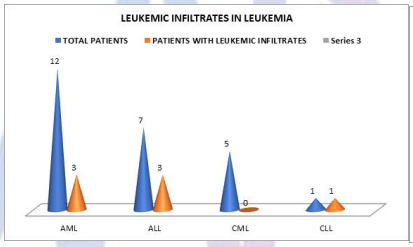

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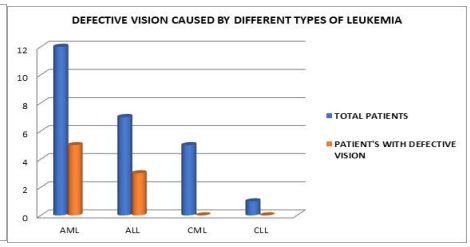

Graph 6

Figure 1: Roth spot, Disc Edema, Disc Haemorrhage, Subhyaloid Haemorrhage in ALL, **Figure 2:** Pre-Retinal / Subhyaloid Haemorrhage in AML

DISCUSSIONS

Acute Leukemia is the commonest type of Leukemia. Retinal Haemorrhages and Roth spots are uniformly seen in different types of Leukemias, in both acute and chronic diseases. Retinal ischemic changes in form of Cotton Wool Spots is seen in both acute and chronic diseases, but with preference towards Chronic Leukemias. Leukemic infiltrates are seen commonly in Lymphoid Leukemia, both acute and chronic. Defective Best Corrected Visual Acuity is seen only in Acute Leukemias, mainly due to macular pre-retinal haemorrhage.

CONCLUSION

Haemorrhagic retinal changes is seen in all types of Leukemias. Ischemic retinal disease is common with Chronic leukemias. Leukemic infiltrates are common with

Lymphoid leukemias. Decrease in Visual acuity is mainly due to macular pre-retinal haemorrhages in Acute Leukemias. Understanding of the retinal and optic nerve head manifestations in various types of Leukemias will help in proper Ophthalmic evaluation of the Leukemic patients.

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