



OCULAR MANIFESTATIONS IN ANAEMIA - A HOSPITAL BASED CLINICAL STUDY

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ABSTRACT **INTRODUCTION:** Anemia is a frequent hematological disorder presenting with diverse ophthalmic manifestations¹. It can involve any part of the eye and adnexa, but principal features are conjunctival pallor and retinal hemorrhages². The incidence and severity of retinal manifestations depend upon the severity of anemia^{3,4}.

MATERIALS AND METHODS: This is a prospective, cross-sectional study including 100 patients, with age group between 10 to 30 years, of either sex diagnosed with anemia due to various causes. After obtaining informed consent, a complete general physical examination and ocular examination were carried out, and findings recorded.

RESULT: In our study the most common ocular manifestation in anemia was conjunctival pallor seen in almost all the patients(100%), followed by retinal venous tortuosity(86.3%), cotton wool spots (81.8%), fundus pallor(22%), retinal hemorrhages(21%), Roth spots(3%), papilloedema(2%) and subconjunctival hemorrhage(1%).

CONCLUSION: The ocular manifestation is an initial indication of an underlying hematological disorder. It is crucial to be aware of these changes as well as the essential ophthalmological findings associated with hematological diseases, as prompt diagnosis and treatment are critical in the management of these disorders to prevent further complications.

KEYWORDS : Anemia, ocular manifestations, pallor, hemorrhages, ophthalmoscopic examination.

INTRODUCTION:

The anemia is a group of disorders characterized by a reduction in the number of circulating red blood cells or in the amount of hemoglobin in each cell or both¹. Anemia is the most common hematological disorder in India. The retinal metabolism is unable to tolerate its deprivation of essential supplies resulting in hypoxic damage to the tissues in the end². Anemia can thus be an indicator of retinal damage manifesting as hemorrhage or pallor. Palpebral conjunctival pallor is the constant ophthalmological finding in anemia³. Retinal changes in anemia are usually innocuous and rarely of diagnostic importance. Retinopathic changes like retinal venous tortuosity are related to the severity of anemia but may occur in isolation⁴. Dot, blot, and flame-shaped hemorrhages, cotton wool spots, and Roth spots are more common with co-existing thrombocytopenia^{5,6}. This study intends to describe the various ocular manifestations in anemia in relation to its severity.

MATERIALS AND METHODS:

This is a prospective, cross-sectional study including 100 patients, with age group between 10 to 30 years, of either sex diagnosed with anemia due to various causes, attending Regional Eye Hospital, at Kurnool Medical College, Kurnool, between September 2019 to February 2020, having a study duration of 6 months. Hypertension and diabetes are excluded from the study. After obtaining informed consent from the patient, we recorded a detailed history, along with a complete systemic and ophthalmic examination using torchlight and slit lamp biometry for the anterior segment; and fundus examination using direct ophthalmoscopy after pupil dilatation using mydriatics, i.e., Tropicamide. Investigations like complete blood count and peripheral blood smear tests were done for all the patients.

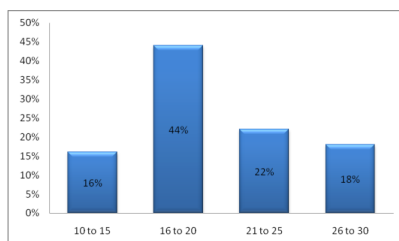
RESULT:

Figure 1: Age Distribution

Out of 100 patients, the maximum number of patients (44%) are in the age group between 16 to 20 years, followed by 21 to 25 years(22%).

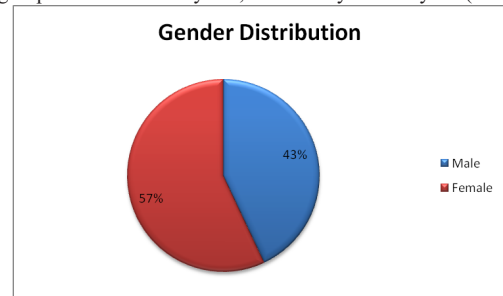


Figure 2: Gender Distribution

In our study, females(57%) predominance is more compared to males(43%), probably due to anemia is more frequently seen in females compared to males in the general population due to various reproductive causes.

Table 4: Distribution Of Ocular Manifestations In Anemia With Severity

Ocular manifestations	Mild anemia (33)	Moderate anemia (45)	Severe anemia (22)	Total % (out of 100 cases)
Conjunctival pallor	33(100%)	45(100%)	22(100%)	100%
Sub-conjunctival hemorrhage	0	0	1(4.5%)	1%
Fundus pallor	0	7(15%)	15(68%)	22%
Retinal venous tortuosity	0	8(17.7%)	19(86.3%)	27%
Retinal hemorrhages	0	6(13.3%)	15(68%)	21%
Papilloedema	0	0	2(9%)	2%
Cotton wool spots	0	4(8.8%)	18(81.8%)	22%
Roth spots	0	0	3(13.6%)	3%

In our study, according to the severity of anemia, the maximum number of patients(45%) has moderate anemia, followed by mild anemia(33%) and then severe anemia(22%). Conjunctival pallor(100%)

was the most common ocular manifestation which was present in all the gradings of anemia, followed by retinal venous tortuosity seen in 8(17.7%) patients with moderate anemia and 19(86.3%) patients with severe anemia. Retinal hemorrhages were observed in 6(13.3%) patients of moderate anemia and 15(68%) patients of severe anemia. Cotton wool spots are seen in 4(8.8%) patients with moderate anemia and 18(81.8%) patients with severe anemia. Roth spots are seen in only 3(13.6%) patients with severe anemia.

DISCUSSION:

Ocular manifestations of anemia are increasingly recognized. Anemia of varied reasons can result in different ocular manifestations⁹. Most patients with ocular manifestation are symptomatic, requiring an ophthalmic consultation. In the present study, out of 100 patients, the maximum number of patients (44%) are found to be in the age group of 16 to 20 years, followed by 21 to 25 years(22%). This is compared to a similar study done by Nusrat et al⁸, where the maximum number of patients are >15 years(70%) and Jakkal et al⁹, where the maximum number of patients(20%) were in the age group between 21-30 years. In our study, females(57%) are more compared to males(43%), which is similar to the study done by Jakkal et al⁹, where 53.33 % of patients were females, and 46.66% of cases were males. Whereas in Nusrat et al⁸, study, males and females are equal (50%:50%). In our study the most common ocular manifestation in anemia was conjunctival pallor seen in almost all the patients(100%), followed by retinal venous tortuosity(86.3%), cotton wool spots (81.8%), fundus pallor(22%), retinal hemorrhages(21%), Roth spots(3%), papilloedema(2%) and subconjunctival hemorrhage(1%). This is compared to the study done by Jakkal et al⁹, where the most common manifestation is conjunctival pallor(100%) similar to our study, but that is followed by fundus pallor(38.46%), retinal hemorrhage(30.76%), Roth spots(13%), cotton wool spots(10%), papilloedema(5%) and subconjunctival hemorrhage(2.5%). In Shitole et al⁷, study, the most common manifestation is conjunctival pallor(100%), followed by retinal hemorrhage(37.50%), fundus pallor(31.25%), Roth spots(18%), cotton wool spots(8%), retinal edema(6%), subconjunctival hemorrhage(6%).

CONCLUSION:

Conjunctival pallor and flame-shaped hemorrhages are the most common ocular manifestations in patients with anemia. The presence of conjunctival pallor further needs evaluation for the presence and severity of anemia. Patients with moderate to very severe anemia should undergo a fundus examination to diagnose these conditions. Early recognition of retinal manifestation may help in early intervention and, thus, an early resolution of retinal changes. Anemic retinopathy is reversible with the correction of the anemia. Anemic retinopathy can also be a secondary manifestation of other systemic diseases such as cancer, infection, or autoimmune disorders. Therefore, in addition to complete blood count, another appropriate medical testing may be necessary.

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