



## ANEMIC RETINOPATHY-A REPORT OF TWO CASES AND A REVIEW OF LITERATURE SAVITHA A AYYADURAI

Department of Ophthalmology, MADRAS MEDICAL COLLEGE AND GOVERNMENT GENERAL HOSPITAL

**Abstract** :The Anemias are a group of Hematological disorders manifesting in a decrease in the circulating level of red blood cells or hemoglobin level. Retinopathy in patients with anemia is well documented. We report two patients with anemic retinopathy diagnosed and followed in our department. The Fundus findings in anemic retinopathy include hemorrhages that presents in all levels of retina, Roth's spot, exudates, retinal edema and venous dilatation. The Hemorrhages are typically superficial and flame shaped, may also have a white centre. Diagnosis made on blood investigation and confirmed by resolution of retinal findings upon correction of anemia.

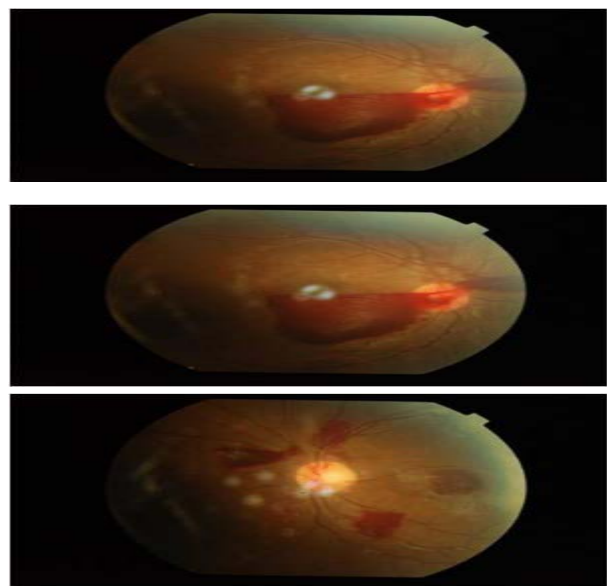
**Keyword** :retinopathy, hemorrhage, Roth's spot, retinal edema. Anemic retinopathy is most likely to occur in patients with severe anemia (or) when thrombocytopenia co-exist. Approximately 1/3rd of anemic patients may have some retinopathy. The ocular changes in anemic retinopathy resemble diabetic or HT retinopathy. Severe Hemorrhage may also result in shock optic neuropathy. Anemic Retinopathy may also be a secondary manifestation of other systemic diseases such as cancer, infection or other autoimmune disorder.

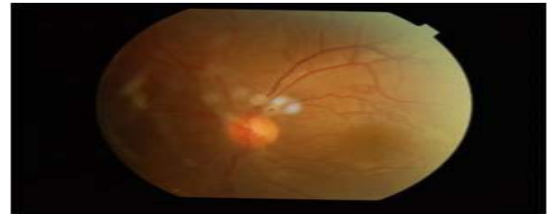
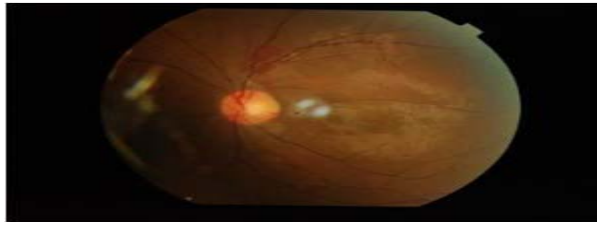
### CASE REPORT

**CASE 1**: A 23 yr old male presented to RIIOGH with C/O Defective vision in BE Since 2wks (RE>LE). no h/o pain, photophobia, trauma, redness. H/o epigastric pain, vomiting on & off since 5 months. H/O Pain increased after taking food - 5 months. H/o passing black coloured tarry stools - 3 months. pt known alcoholic/Smoker-5 yrs. on general examination, pt was moderately built & nourished, generalised pallor+, angular cheilitis+, BP-110/70 mmHg, PR-90/min, CVS-S1S2+, RS-NVBS. P/A-Soft. Epigastric Tenderness+, CNSFNND. on ocular examination visual acuity by Snellen's chart showed right eye had an uncorrected visual acuity of RE-6/36 NIP, LE-6/24 NIP. Anterior segment examination was normal. A dilated Fundus examination revealed RE-Media clear, Disc appears normal. Venous dilatation & tortuosity present. Large subhyaloid haemorrhage seen in IT quadrant partially covering the disc & macula & another haemorrhage in the SN quadrant.

• LE-Media clear, Disc -appears normal. venous dilatation & tortuosity present. Multiple preretinal haemorrhages surrounding the disc. Macula-FR absent. Clinically we came to a diagnosis of anemic retinopathy.

• Blood investigation done -Complete haemogram Hb-5.0gm/dl, Tc-3,800 cells/cumm, DC -48/45/01/06/00, ESR-8mm/hr, RBS-92 mg/dl, platelet count-1.8 lacks/cumm. Stool examination for occult blood-positive. BT, CT, PL.Count-WNL. Peripheral blood transfusion done smear-Microcytic hypochromic anemia. Hematologist opinion sought. pt was diagnosed as severe anemia due to gastric ulcer (alcohol induced) with melena. pt undergone 1 unit of blood transfusion. pt was followed upon an outpatient basis & 2 month post transfusion his Rpt was Hb-8.9 mg/dl, Vision improved to RE-6/18 NIP, LE-6/18 with PH 6/12. Fundus examination revealed -Resorption of retinal haemorrhages surrounding the disc.



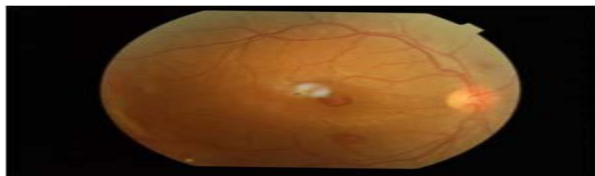
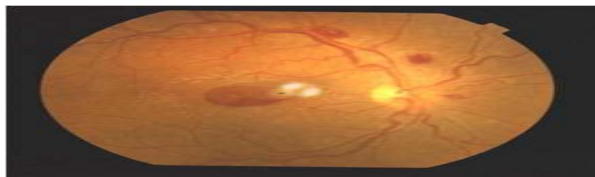


## CASE 2

A 25 Yr old young male, came to our retina clinic, R/OGOH with c/o weakness, Lightheadedness since 1 month, H/o blurring of vision RE since 1wk. (RE > LE). pt known case of HIV on ART Since-2 yrs from TB Sanatorium. H/o Anti retroviral drug intake-zidovudine for past 1 yr. On General examination-pt was moderately built/nourished, Generalised pale yellow skin+, glossitis+. BP-120/70 mmHg, PR-92/min. cvs-s1s2+, RS-NVBS, P/A-Soft., CNS-NFND. Ocular examination-vision RE-6/36 PH 6/24p, LE-6/6p. BE -Anterior segment-Normal. Fundus -RE-Media clear. Disc edema +, venous dilatation & tortuosity in all four quadrants. Flame shaped hemorrhage seen superior to disc & nasal aspect of disc. Roth's spot seen along ST arcade. macula-a small subhyaloid haemorrhage+. LE -Media clear. Disc edema+, Venous dilatation in all four quadrants, Roth's spot Seen along SN aspect of Disc. small superficial flame shaped haemorrhages along ST & IT arcade.

## INVESTIGATION Complete

Hemogram showed TC-5400/cumm (Normal value-4000-11,000/cumm), DC P43L52E5 (N-50-70%, L-20-40%, E-0-6%), Hb-3.6 gms/ (N-14-18gm/dl), PCV-10% (N-36-47%), PL. COUNT-2,94,000/cumm (N-1.5-4 lak/cumm), ESR-1 hr-10 mm (N-0-20 mm/hr), MCV-92.5f (N-80-92fl), MCH-33.2 pg (N-27-32pg), MCHC-36% (N32-36%), peripheral smear-Microcytic hypochromic anaemia. platelet-adequate, USG abdomen-Normal study, RFT, LFT, BT, CT-WITHIN normal. Haematologist opinion sought Regarding blood transfusion. pt was diagnosed as severe anemia due to Antiretroviral drug (zidovudine). pt was started on lamivudine and nevirapine. Mean while, Pt was treated with 3 units of packed cell transfusion. INJ. VITAMIN B12 FOR 3 days & Tablet FST/FAT1 BD. After 3 unit of PCV transfusion, Rpt blood investigation after 5 days showed-TC-8200CELLS/CUMM, DC P56, L42, E2, Hb-9.2 gm/ PCV-28%, VISION Improved upto RE-6/24, LE-6/6. & Fundus-BE-Media clear. Resorption of retinal haemorrhages noted.



## DISCUSSION: ANEMIC RETINOPATHY

Transient Retinal Hemorrhages associated with anemia from gastrointestinal hemorrhage were first described by Ulrich in 1883. Prevalence of Retinopathy increases with severity of anemia or thrombocytopenia. retinal abnormalities in anemia without accompanying thrombocytopenia are less common unless the anemia is profound. The pathogenesis include- Dilatation of retinal vessels in response to retinal hypoxia, resulting in increase in transmural pressure leading on to vascular leakage-Hemorrhage & Retinal edema, cotton wool spots-infarcts NFL of retina-relative hypoxia & vascular spasm. Roth's spot-white centered haemorrhage-represent focal ischemia, inflammatory infiltrate, fibrin & platelets or an accumulation of Neoplastic cells. Fundus picture being-Pale arterioles & Dilated veins, cotton wool exudates, disc edema & retinal edema, superficial flame shaped haemorrhages, subhyaloid haemorrhages, rarely vitreous haemorrhage. FFA-Reveal an increased retinal transit time. Review in literature found -Foulds stated Retinopathy in all patient with a HB Of <5 gm/. Wise & colleagues stated that a HB, 2.5G/DL (or) less is usually associated with retinopathy. several studies by carraro & associates has shown that the prevalence of retinopathy increases with the severity of anemia. The combination of thrombocytopenia & anemia makes retinopathy more likely.

## TREATMENT:

Includes -correction of anemia, correction of underlying cause for anemia., ophthalmic observation of anemic retinopathy.

## Conclusion

Anemic retinopathy has been associated with diseases of red blood cell elements (or) as a secondary manifestation of other systemic diseases & that many of the systemic diseases involved may be associated with similar retinal findings. since anemic retinopathy is almost always reversible with correction of anemia, one should be reluctant to ascribe retinal changes entirely to concomitant systemic disease until restoration of normal hemoglobin levels & fundoscopic reevaluation.

In our case report, both patient had Resolution of subhyaloid & flame shaped haemorrhage & showed improvement in the vision with the treatment of anemia, hence the diagnosis of Anemic retinopathy. Both this case highlights the need for fundus examination in all patients of anaemia with

defective vision and the ophthalmic manifestations do not need any specific treatment other than systemic management

## REFERENCES

- Merin s, Freund M: Retinopathy in severe anemia Am j ophthalmol 1968;66:1102
- Aisen ML, Bacon BR, Goodman Am et al. Abnormalities associated with anemia Arch Ophthalmol 1983;101:1049
- Rubenstein RA, Yanoff M, Albert Dm; Thrombocytopenia, anemia & Retinal Hemorrhages Am j ophthalmol 1968;64:435
- Holt jm, Gordon-smith EC: Retinal abnormalities in diseases of the blood. Br j ophthalmol 1969;53:145

- Carraro MC, Rossetti I, Geeli GC: prevalence of retinopathy in patients in patients with anemia or thrombocytopenia Eur J Haematol 2001 67-238-244
- Fletcher ME, Farber MD, Cohen SB ET AL –Retinal abnormalities associated with anemia(letter) arch ophthalmol 1984;102;358

