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IDIOPATHIC INTRACRANIAL HYPERTENSION WITH IRON DEFICIENCY ANEMIA: CASE REPORT AND LITERATURE REVIEW

Neurology

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ABSTRACT

Idiopathic intracranial hypertension is rarely associated with iron deficiency anemia.We are reporting the case of a 36 year old lady,presenting with headache and diplopia.Ophthalmologic work up revealed established papilledema in both eyes.Lumbar puncture revealed raised cerebrospinal fluid pressure and neuroimaging suggested empty sella, consistent with idiopathic intracranial hypertension.Hematologic work up for pallor showed iron deficiency anemia.Blood transfusion,iron supplements,lumbar puncture improved the symptoms.Iron deficiency anemia should always be ruled out in women having no other risk factors and presenting with idiopathic intracranial hypertension.Clinicians should be aware of the possibility of iron deficiency anemia in patients of idiopathic intracranial hypertension as correction of anemia itself can prevent visual deficit.

KEYWORDS

Intracranial Hypertension, Papilledema, Anemia

INTRODUCTION

Idiopathic intracranial hypertension(IIH) is a state of raised intracranial pressure of unknown etiology.Recently,a meta analysis of 15 studies was done,including 889 patients of 10 different countries.The pooled incidence of idiopathic intracranial hypertension was found to be 1.2/100,000/y in this study.(1) Obesity,drugs,anemia are some risk factors for IIH.(2,3).

CASE REPORT

A 36 year old non obese lady with no other comorbidities presented with one month history of moderate to severe headache,aggravating with lying down position and relieved with sitting.Headache used to wake her from sleep during early morning hours.She also complained of diplopia which was aggravated with left horizontal gaze.History was not suggestive of any other neurological deficit.General examination revealed pallor.Neurological examination revealed, established papilledema both eyes with preserved visual acuity ,field of vision and color vision.Extraocular movements examination revealed left lateral rectus palsy.Examinations of motor,sensory,cerebellar,autonomic nervous system and extrapyramidal system were normal.Neuroimaging by magnetic resonance imaging(MRI)showed empty sella,hypoplastic left transverse sinus,focal narrowing of distal right transverse sinus and normal cerebrum,cerebellum and ventricular system.Optical Coherence Tomography(OCT) revealed papilledema in both eyes.Cerebrospinal fluid(CSF) analysis showed,CSF pressure of 250 mm H_2O,no cells, normal glucose and protein.Complete blood count was done. Hemoglobin level was 5.6g/dl and mean corpuscular volume of red blood cells were 63.2 fl.Peripheral blood smear revealed hypochromic microcytic anemia.In the iron profile study,reduced serum iron and increased total iron binding capacity favoured iron deficiency anemia.Other biochemical and hormonal parameters were normal.The patient was treated initially with acetazolamide,lumbar punctures.She improved significantly after blood transfusions and iron supplements and was discharged after 10 days of treatment.

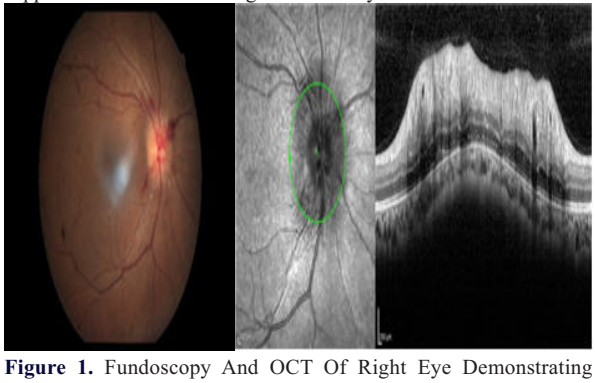

Figure 1. Fundoscopy And OCT Of Right Eye Demonstrating Papilledema.

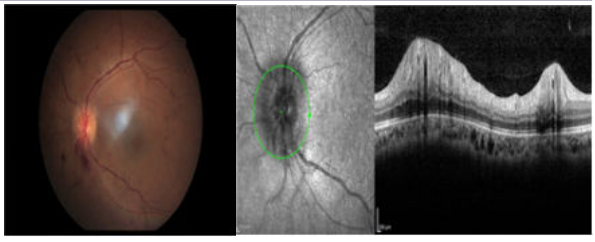

Figure 2. Fundoscopy And OCT Of Left Eye Demonstrating Papilledema.

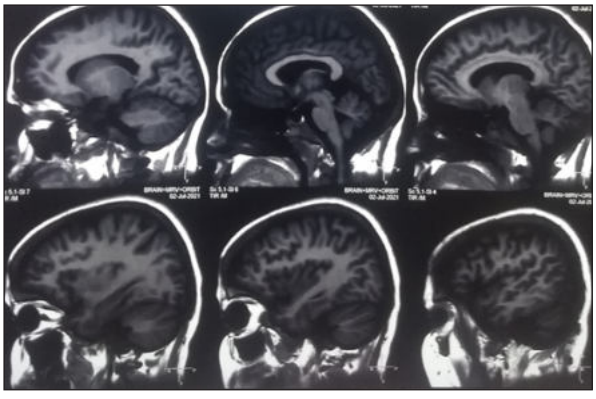

Figure 3. Magnetic Resonance Imaging Of Brain Showing Empty Sella In Sagittal View.

Table 1. Iron Studies Profile Depicting Iron Deficiency Anemia.

TEST NAME	RESULTS	UNIT	REFERENCE INTERVAL
Serum Iron	23.6	µg/dl	37-145
Unsaturated Iron Binding Capacity	514.8	µg/dl	135-392
Total Iron Binding Capacity	538	µg/dl	228-428
Transferrin Saturation Index	4		16-45

DISCUSSION

Iron deficiency anemia(IDA) is very frequent and worldwide it is the most prevalent etiology of anemia.(4) Our case highlights the importance of focus on common risk factors like iron deficiency anemia in patients of IIH,especially women,so that,mere correction of anemia can prevent dreadful complications to the extent of blindness.Mollan et al.(2009) performed a consecutive case note review of clinically diagnosed IIH patients.Their study presented an association between iron deficiency anemia and IIH.(5) Sim et al.(2021) reported a case of IIH in a 31 year old woman with IDA who improved significantly after correction of anemia.(6) Though causative role of anemia in raised intracranial pressure has not been

defined clearly,several mechanisms have been proposed.Iron is one of the factors regulating thrombopoiesis.Inhibition of the rise in platelet count by iron prevents development of hypercoagulable state.Weakening of this inhibition in iron deficiency predisposes a person to thrombocytosis and hence thrombosis.(7) Some studies suggest that,tissue hypoxia induced altered cerebral hemodynamics in iron deficiency anemia leads to increased brain capillary permeability and hence increased intracranial pressure.(8)Hyperviscosity theory seems to be the most possible explanation of IIH in patients of iron deficiency anemia.Decreased CSF absorption due to raised venous pressure results in increased intracranial pressure.(9)Papilledema refers to the swelling of optic nerve head. The thickness of retinal nerve fiber layer increases in patients of IIH with papilledema.(10,11) Axoplasmic stasis due to raised CSF pressure causes swelling of retinal ganglion cell axons and hence retinal nerve fiber layer thickening.Our case report highlights that,in a patient with no other comorbidities and no obvious drug history,clinical examination for anemia and further hematologic work up can give the biggest clue for etiology and management of IIH.

CONCLUSION

In summation,we want to highlight that,in a developing country like India,where prevalence of anemia is very high in women of reproductive age group,clinicians should work up for anemia in IIH patients,especially in absence of any other comorbidities and risk factors.The timely correction of anemia itself can improve the clinical condition and may prove to be sight saving.

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