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Clinical Profile and Visual Outcome of Patients with Idiopathic Intracranial Hypertension in a Tertiary Care Hospital

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ABSTRACT- Background: Idiopathic intracranial hypertension though rare,its prevalence is increasing in view of increasing obesity .Background relevance of our study is that early detection and management of Idiopathic intracranial hypertension patients presenting in headache clinics results in better visual outcome.

Aim: To assess the clinical profile and visual outcome of patients with idiopathic intracranial hypertension admitted at our institute .

Settings and Design: Retrospective , observational study of 57 patients admitted at our institute(Travancore medical college hospital).

Materials and Methods: It was a Retrospective study based on review from hospital database of patients diagnosed with Idiopathic intracranial hypertension as per modified Dandys criteria. The patients included in the study were from October 2016 to October 2018 admitted at our institute and statistical analysis done.

Results: 57 patients of IIH aged above 15 years were included in our study .Of which 87.7% were females.Though headache were reported in 94.7% of patients,other symptoms like transient visual obscurations and blurred vision were also common.Patient presenting with grade II papilledema(29.8%) were common in our study. Obesity contributed as a independent risk factor among our patients with body mass index of 25 and above seen in 77% patients ,the rest were in overweight group.MRI brain findings typical of IIH were seen in 96.4% patients .49% of patients showed improved visual outcome at one month after initiating medical management with weight reduction and 86% after 3 months medication.

Conclusion: Early detection of IIH and appropriate management will preserve vision and can avoid surgical intervention.Obesity is a common risk factor for IIH, hence weight reduction is also a part of treatment protocol.

Keywords: Idiopathic Intracranial Hypertension, papilledema, headache,obesity.

I. INTRODUCTION-

Idiopathic intracranial hypertension (IIH) is a disorder of increased cerebrospinal fluid(CSF) pressure of unknown cause. Quincke in 1897 reported the first case of IIH shortly after he introduced the lumbar puncture into medicine[1]. The overall age-adjusted and gender-adjusted annual incidence is increasing and was reported to be 2.4 per 100 000 within the last decade (2002–2014).[2]IIH is commonly reported in females [1,2] .The commonest symptom of IIH is headache[3], though other presentations are also seen like transient visual obscurations,pulsatile tinnitus, progressive visual loss and diplopia . Eye Signs include papilledema of various grades and occasionally sixth cranial nerve (CN) palsy[4] .The only major morbidity with IIH is progressive visual loss[5].

The IIH patients are commonly detected from headache clinics and some referred by ophthalmologist for papilledema evaluation.In usual practice it is quite common to miss IIH in early stage.On evaluation of headache patients with papilledema ,IIH is detected after ruling out secondary causes. Accordingly Modified Dandys criteria[6] is adopted for diagnosing IIH patients.

MRI Brain typical findings are empty sella, flattened globes with posterior indentation of globe by optic nerve and tortuous optic nerves[1,7]. MR venography is normal except for transverse venous sinus stenosis. MRI brain with MR venography should rule out secondary causes of raised intracranial pressure like meningitis, space occupying lesions,cortical vein thrombosis,obstructive hydrcephalus.CSF study in IIH shows elevated CSF pressure (>20 cm water in the nonobese and >25cm water in the obese patient)with normal CSF study[3].

Modified Dandy Criteria for IIH[6]

1. Signs and symptoms of increased intracranial pressure.

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2. Absence of localizing findings on neurologic examination.
3. Absence of deformity, displacement, or obstruction of the ventricular system and otherwise normal neurodiagnostic studies, except for evidence of increased cerebrospinal fluid pressure (greater than 200 mm water).Abnormal neuroimaging except for empty sella turcica, optic nerve sheath with filled out CSF spaces, and smooth-walled non flow-related venous sinus stenosis .
4. Awake and alert.
5. No other cause of increased intracranial pressure present For CSF opening pressure of 200 to 250 mm water required and at least one of the following:

- Pulse synchronous tinnitus
- VI cranial nerve palsy
- Frisen Grade II papilledema
- Echography for drusen negative and no other disc anomalies mimicking disc edema present
- MRV (Magnetic Resonance Venography) with lateral sinus collapse/stenosis.
- Partially empty sella on coronal or sagittal views and optic nerve sheaths with filled out CSF spaces next to the globe on T2 weighted axial scans.

Reduction in CSF absorption through arachnoid granulations is the most popular hypothesis accepted as pathophysiology of IIH[8]. Hence CSF Shunting procedures have been used for the treatment of IIH in patients who fail medical management with worsening of visual acuity(fulminant IIH)[9] such as lumbar subarachnoid-peritoneal shunt, ventriculoatrial, ventriculojugular, and ventriculoperitoneal shunts. The most common CSF diversion procedure done is lumbo peritoneal shunt.Endovascular invasive techniques like transverse sinus stenting are also adopted in few centers.
Poor visual prognosis in these patients are due to delayed presentation,failed medical therapy and poor compliance to therapy .
Background relevance of our study is that early detection and management of Idiopathic intracranial hypertension patients results in better visual outcome.

Aim and objectives: To assess the clinical profile and visual outcome of patients with idiopathic intracranial hypertension admitted at our institute.

Material and Methods-It is a Retrospective study based on data collected from hospital database of patients diagnosed and treated for Idiopathic intracranial hypertension as per modified Dandys criteria.Patients included in the study were from October 2016 to October 2018 admitted at our institute(Travancore medical college hospital) and then appropriate statistical analysis was done.

Study procedure:

Patients with age above 15 years admitted with headache of recent onset or with chronic headache were evaluated with detailed history, general physical examination including Body mass index , Visual acuity, Fundus examination for papilledema grading (Modified Frisen scale)[10] and detailed CNS examination done.
History of onset and duration of headache, associated symptoms like vomiting,transient visual obscurations,double vision,blurred vision were noted.

History of fever, head injury,seizures,altered sensorium were asked to rule out secondary causes of headache.History of hypothyroidism,steroid treatment,intake of Vitamin A tablets,calcium deficiency symptoms,parathyroid diseases,intake of antibiotics or other medications were asked and noted.Above history and details were taken from clinical database.

Routine blood investigations(complete blood count,serum creatinine,Liver function test,Thyroid function test,Serum calcium ,S.ANA),MRI BRAIN with Contrast and MR venography,CSF STUDY with CSF pressure monitoring done..

After diagnosing IIH as per modified Dandys criteria patients were medically managed with Acetazolamide,frusemide as per guidelines and were advised for weight loosing techniques and appropriate low calorie diet advised.Impending visual loss if predicted were referred for shunting procedure or optic nerve fenestration surgery.

Patients were followed up at one month and three months after initiating medical management and following test were done on outpatient basis and results collected from database

1. Visual acuity
2. Fundus
3. Perimetry
4. Body mass index

II. RESULTS-

Though studies on IIH were previously done at various institutes,in our study we stress the importance of early detection and management.57 patients were included in the study of which 50 patients were females and 7 males.

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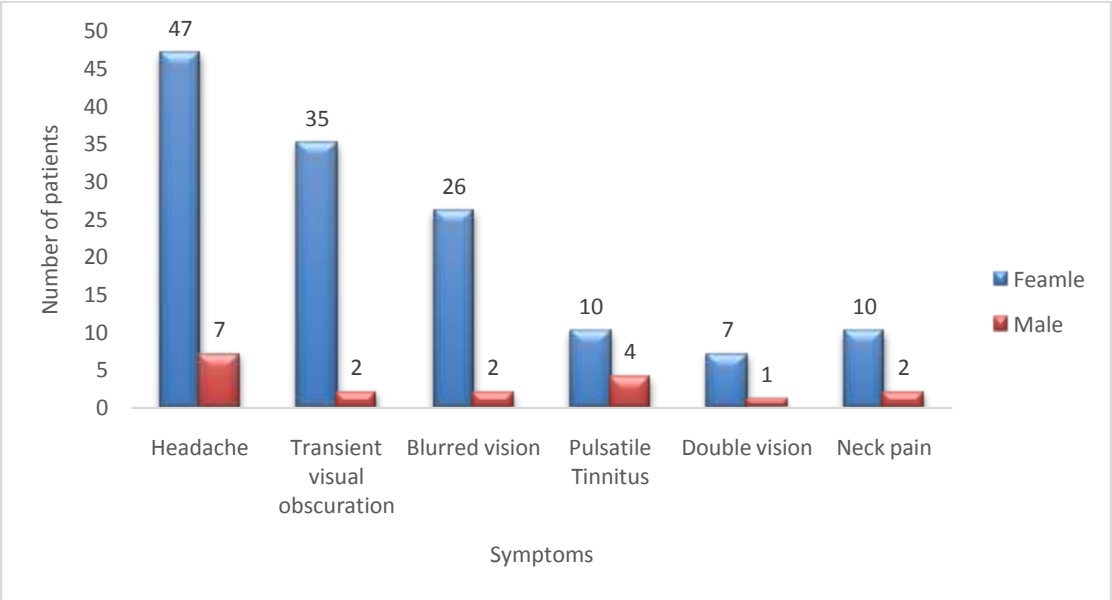
Age group	Gender	
	Females (n=50)	Males (n=7)
15-25	2 (4.0%)	0 (0.0%)
25-35	16 (32.0%)	3 (42.8%)
35-45	28 (56.0%)	4 (57.2%)
>45	4 (8.0%)	0 (0.0%)

Initial presenting symptoms

Symptoms	Gender	
	Females (n=50)	Males (n=7)
Headache	47 (94.0%)	7 (100.0%)
Transient visual obscuration	35 (70.0%)	2 (28.6%)
Blurred vision	26 (52.0%)	2 (28.6%)
Pulsatile Tinnitus	10 (20.0%)	4 (57.1%)
Double vision	7 (14.0%)	1 (14.3%)
Neck pain	10 (20.0%)	2 (28.6%)



Body mass index of patients

BMI—Kg/m2	Number of patients(n=57)	Percentage
20<25	13	22.8
25<30	26	45.6
≥30	18	31.6

Grading of Papilledema at the time of admission (Modified Frisen scale)

Papilledema grading	Number of patients(n=57)	Percentage
Grade 1-minimal degree of disc edema	18	31.5
Grade 2-low degree of disc edema	17	29.8
Grade 3-Moderate degree of	14	24.6

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edema		
Grade 4—Marked degree of edema	3	5.3
Grade 5-Severe degree of edema	5	8.8

MRI Findings in patients

MRI findings	Number of patients(n=57)	Percentage
Empty sella	55	96.5
Tortous optic nerves	28	49.1
Distension of perioptic subarachnoid space	35	61.4
Transverse sinus stenosis	38	66.7
Normal MRI	2	3.5

CSF Pressure recordings

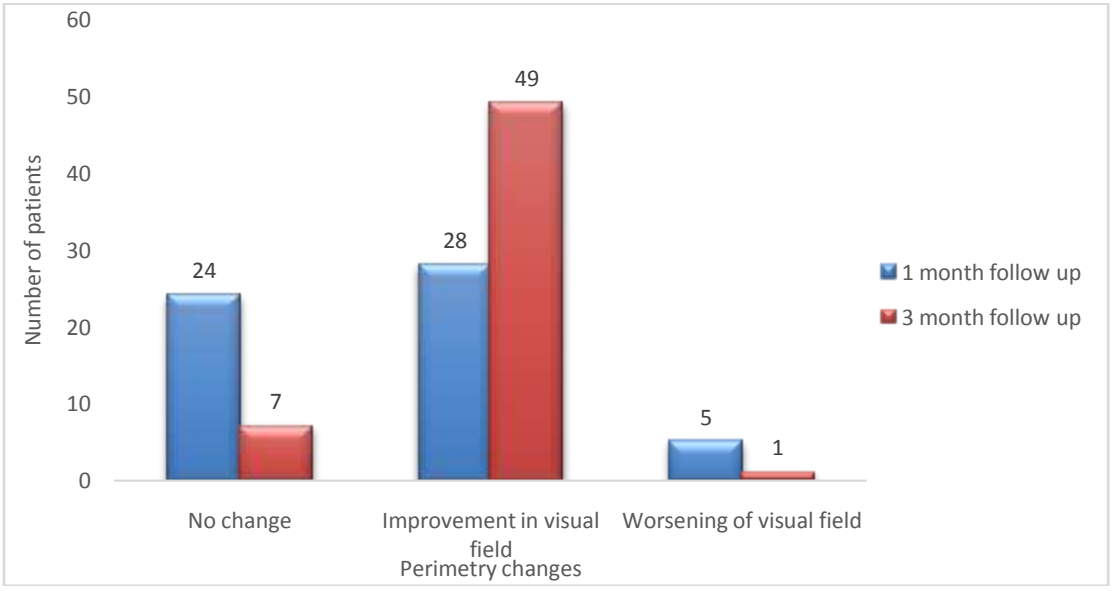
CSF Pressure (cm of water)	Number of patients(n=57)	Percentage
20 to <25	3	5.3
25 to <30	38	66.7
30 to <35	11	19.2
≥35	5	8.8

Perimetry changes after initiating treatment- 1 month follow up

Perimetry charting	Number of patients(n=57)	Percentage
No change	24	42.1
Improvement in visual field	28	49.1
Worsening of visual field	5	8.8

Perimetry changes after initiating treatment- 3 months follow up

Perimetry charting	Number of patients(n-57)	Percentage
No change	7	12.3
Improvement in visual field	49	86.0
Worsening of visual field	1	1.7



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III. DISCUSSION-

Idiopathic intracranial hypertension though rare ,it is increasing in prevalence due to increasing prevalence of obesity[2].In our study we have treated 57 patients of IIH of whom 87.7% were females.Though headache were reported in 94.7% of patients,other symptoms like transient visual obscurations and blurred vision were also common.Three patients did not present with headache.Hence small percentage of patients can present without headache.

Patient presentation with grade II papilledema were common(29.8%) ,but there are reports of IIH presentation without papilledema.[11]

Obesity contributed as a common cause among our patients with body mass index of 25 and above seen in 77% patients ,the rest of the patients were in overweight group. Khin P Kilgore et al in 2017 in a Retrospective study on IIH observed that in obese women of age 15 to 44 years, the incidence of IIH was 22.0 per 100 000 compared with 6.8 per 100 000 among all women in the same age group[12].

MRI brain findings typical of IIH were seen in 96.4% of patients and the common finding was empty sella.Two patients had normal MRI finding and were diagnosed with CSF pressure monitoring.Hence strong suspicion of IIH requires CSF study to confirm,rather relying on MRI findings only.

Clinical outcome in our study group showed that 49% of patients showed improved visual outcome at one month after initiating medical management and weight reduction diet .86% of patients had almost normal vision after 3 months.one patient had poor visual outcome inspite of medical management as she presented late and patient underwent optic nerve fenestarion surgery .Hence early detection of IIH patients by clinicians and appropriate early medical management could save vision.

IV. CONCLUSIONS-

This study is an observational retrospective study of IIH patients admitted at our hospital.From our statistical data it is concluded that early detection of IIH and appropriate management could preserve vision and can avoid surgical intervention.Obesity is a common risk factor for IIH, hence weight reduction is also a part of treatment protocol.

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LEGENDS

FIGURE 1-MRI BRAIN showing empty sella,tortous optic nerves and posterior indentaion of eye ball. MR venogram showing left transverse sinus stenosis/collapse suggestive of IIH.

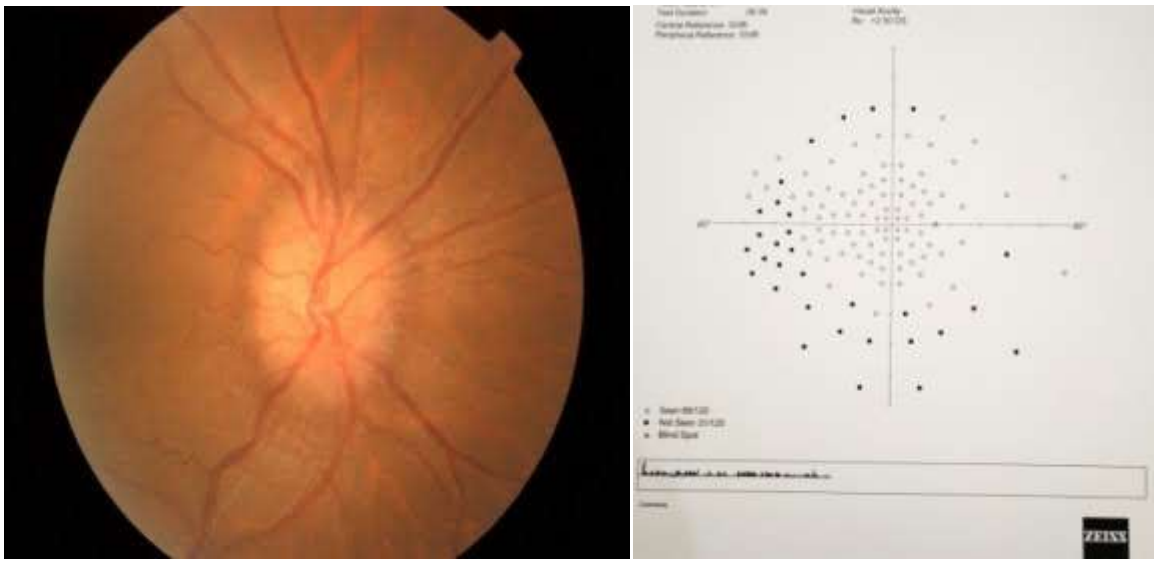

FIGURE 2-Fundus picture showing papilledema and Perimetry showing peripheral visual constriction in IIH patient