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Acute Intermittent Porphyria Presentig as Acute Abdomen

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SUMMARY

The case of a 29 years old lady, who was admitted with frequent episodes of pain abdomen, vomiting, abdominal distension and constipation has been presented. Having diagnosed as acute abdomen, exploratory laparotomy was done. The diagnosis of Acute Intermittent Porphyria (AIP) was made, when on 7th post-operative day, she developed flaccid paralysis of all four limbs with normal conscious level. The etiology and pathogenesis of AIP has been discussed with a review of pertinent literature.

A 29 years old lady was admitted because of frequent episodes of pain abdomen, vomiting, abdominal distension and constipation of 15 days' duration but now for the last 3 days she was having severe pain abdomen, absolute constipation, some distension of abdomen and vomiting. In the past she was having same complaints off and on for the last 2 years with spontaneous recovery. Examination revealed fea-tures of dehydration and acute intestinal obstruction. Plain X-ray abdomen showed features suggestive of large bowel obstruction. Abdominal ultrasound showed no abnormality. Other laboratory investigations are shown in Table 1 and 2.

Table 1: Pre-operative laboratory investigations.

Test	*Unit*	*Reported values*	*Normal Range*
Haematological Indices			
Hb	g/dl	11.0	12-1C
WBC	/cmm	12600	4000-10.000
Polys	%	82	-
Lympho	%	18	-
ESR	mm/1st hr.	25	upto 20
Na^+	mmol/L	128	135-150
K^+	mmol/L	3.1	3.5-5.5
CL^-	mmol/L	85	97-111
BUN	mg/dl	14	10-50
Creatinine	mg/dl	1.0	0.4-1.6

C.S.F. examination was normal and her urine was strongly positive for porphobilinogen (PBG).

Exploratory laparotomy was done which showed distended loops of gut till upper half of descending colon while lower half of descending colon and sigmoid colon were collapsed but no gross abnormality causing intestinal obstruction was found. Her recovery from anaesthesia was slow and she remained drowsy for about 24 hours. On 3rd post operative day she started complaining of aches and pains all over the body with generalized weakness. On 4th post operative day she could not move her limbs though mentation was clear. The examination showed flaccid paralysis of all the four limbs with total loss of power except mild flicker in fingers and toes. Deep tendon reflexes were absent while plantar reflexes were not elicitable and there was no sensory loss.

Table 2: Pre-operative findings of urine, X-ray and ECG.

Urine Examination	
Color	Yellow
Sp. Gravity	1030
pH	6.0
Microscopy	Normal
Chest X-ray	Normal
E.C.G.	1. Sinus Tachycardia 2. Non-specific S.T. changes.

Tensilon test was negative. Blood levels of Mg^{++} and Phosphorus awere normal while other laboratory investigations are shown in Table-3.

She was given 1500 to 2000 K cal/day in the form of I/V dextrose but she did not improve. On 7th post-operative day, she developed paralysis of respiratory muscles and was put on ventilator. Apart from haematin, she was treated aggressively for Acute Intermittent Porphyria (A.I.P) by maintaining fluid and electrolyte balance with c.v.p. between 8 and 12 cm. of water. She did not respond to the treatment and

had cardiac arrest on 18th post-operative day. Resussitation was unsuccessful.

Table 3: Post-operative laboratory investigations.

Test	*Unit*	*Reported values*	*Normal Range*
Haematological Indices			
Na^+	mmol/L	130	135-150
K^+	mmol/L	3.1	3.5-5.5
S. Ca^{++}	mg/dl	8.6	9.11
CPK	U/l	1100	24-195
BUN	mg/dl	30	10-50
Creat	mg/dl	1.4	0.4-1.6
B. Glucose	mg/dl	95	70-110
SGPT	U/L	36	upto 40
SGOT	U/L	63	upto 37
LDH	U/L	169	27-48
Aldolase	U/L	11.0	7-6
T. Biliribin	mg/dl	0.8	0.2-1
D. Bilirubin	mg/dl	0.4	upto 0.3
Alk. Phosphatase	U/L	267	64-306
Urinary findings			
Urinary Na^+	mmol/L	84	20-188
Urinary K^+	mmol/L	28	18-83

DISCUSSION

Porphyrias are a group of disorders consisting of deficiency of some enzymes leading to disturbances of heme biosynthesis. Acute intermittent porphyria (A.I.P.) is the most severe form of acute porphyrias as it may lead to generalized paralysis including that of respiratory muscles and cause death. The patient may present to surgical emergency room with acute abdomen or medical emergency room with acute onset of generalized flaccid paralysis; unnecessary surgical or medical intervention may be avoided by high index of suspecion and testing the urine for porphobilinogen. The first case of porphyria was reported in 1890 but before that few cases, now thought to be suffering from porphyria, are on the record[1].

This young lady was suffering from acute intermittent porphyria (A.I.P). Prerviously she was having eppisodes of sub-acute intestinal obstruction relieving spontaneously but now there were features of acute intestinal obstruction. These were, most likely, due to autonomic neuropathy as a part of A.I.P. The operative findings were also suggestive of functional obstruction rather than organic obstruction. Post-operatively she developed flaccid paralysis of all the four limbs with normal conscious level. This progressed to involve the repiratory muscles as well and she needed mechanical respiratory support. A.I.P. is one of the important causes of generalized motor paralysis of acute onset with normal conscious level and normal C.S.F. findings.

She was also having another feature of A.I.P. i.e. syndrome of inappropriate A.D.H. secretion causing persistantly low serum sodium and potassium with increased urinary Na^+ concentration in the presence of normal or slightly raised C.V.P. The raised level of various enzymes were most likely due to surgery. In the presence of above mentioned clinical picture, it was sufficient to confirm the diagnosis by finding strongly positive porphobilinogen in urine. Other tests for A.I.P. were not possible in our setting. The precipitating factors in this patient were poor intake as during 3 pre-operative days and 2 post-operatively days she was taking only parenteral fluids and nuitrition and was having frequent vomiting. Surgical stress aggaravated it.

Thus in any patient who is presenting with acute abdomen or acute onset motor paralysis with or without Syndrome of Inappropriate Anti diuratic Harmone (S.I.A.D.H.), A.I.P. should be considered in the differential diagnosis and urine should be tested for the presence of porphobilinogen.

The porphyrias are disorders associated with inherited or acquired disturbances in heme biosynthesis. Depending upon the enzyme involved various types of porphyrias occur. In case of A.I.P. the defect consists of partial (50%) deficiency of porphobilinogen deaminase, the enzyme that converts PBG to uroporphyrinogen. In the liver this partial deficiency of enzyme leads to increased activity and or inducibility of ALA synthetase by drugs and other factors and therefore causes increased formation and urinary excretion of ALA and PBG[1-3] Deficiency of the enzyme does not necessarily result in clinical manifestations of acute porphyria without additional acquired factors. A.I.P. is an autosomal dominant trait with variable expressivity and only a third or less individuals with genetic defect ever experience an attack of porphyria. It is the most severe form of the acute porphyrias. Male to female ratio is 2:3, mainly young adults[4]. Gastrointestinal symptoms occur in 95% of cases, most of the patients presenting with acute colicky central abdominal pain or vomiting and constipation most likely due to autonomic neuropathy. There may also be limb or generalized muscular aches. Hyponatraemia occurs in severe attacks. Multiple mechanisms have been

implicated for this including imprudent fluid therapy, sodium loosing nephropathy related to toxic effect of AIA but the major mechanism appears to be inappropriate release of antidiuretic hormone. Hypomagnesemia may also occur[6,7].

Symmetrical weakness involving all the four limbs or even respiratory muscles may occur due to acute onset motor neuropathy in about two thirds of porphyria attacks. Severe anxiety or frank psychosis are the main psychiatric manifestations. Cardiovascular manifestations include sinus tachycardia and labile hypertension. Death is usually due to respiratory paralysis. Acute attack may last from days to months . Common factors precipitating the attack are drugs like barbiturates, anticonvulsants, contraceptives, alcohol, infection, starvation and steroids[6,7].

In patients with clinical suspicion of A.I. Prophyria, the diagnosis can be confirmed by finding porphobilinogen (PBG) in urine of these patients. The qualitative test, which is commonly done, becomes positive only when the concentration is 3 to 5 times the upper limit of normal. If this test is negative then quntitative analysis for urinary PBG is carried out[7].

Management of acute attack consists of avoiding the precipitating factors, interavenous carbohydrate intake between 1500 and 2000 K cal/24 hours e.g 2 litres of 20% solution I/V /day is most often used. Those who do not respond, I/V haematin may be used (4-98 mg/kg over 30 minutes) once or twice daily. Propranolol may be for sinus tachycardia or hypertension, tracheostomy and intermittent positive pressure breathing for respiratory paralysis[6,7]. The acute attack may last from days to many weeks.

CONCLUSION

This unfortunate young lady was having most of the features of acute intermittent porphyria e.g. past history of intermittent colicky pain abdomen, and constipation; now having acute intestinal obstruction without any organic lesion and later on developed generalized paralysis including respiratory muscles. she also had syndrome of inappropriate antidiuretic hormone secretion and the diagnosis was confirmed by finding urine positive for porphobilinogen. Thus a high index of suspecion and urine test for porphobilinogen are required to reach a diagnosis of acute intermittent porphyria in patients presenting with acute abdomen or acute onset generalized motor paralysis due to acute intermittent porphyria.

REFERENCES

1. **Gordon AG.** Prophyria in the region of George III. *N Engl J Med 1985*; **312**: 248-9.
2. **Brodie MJ, Moor MR, Goldberg A.** Enzyme abnormalities in prophyria. *Lancet 1977*; **2**: 699-701.
3. **Elder GH, Gray CH, Micholson DC.** The prophyrias: a review *J Clin Pathol 1972*; **25**: 1013-5.
4. **Moor MR.** The biochemistry of prophyrias. *Clin Hematol 1980*; **9**: 227-9.
5. **Martin A, Samuel S, Bhagwan TS.** A 29 year old woman with abdominal pain, myalgia and muscle weakness. *N Engl J Med 1984*; **311**: 839-47.
6. **Meyer UA.** Porphyrias. In: Brawnwold E, Isselbacher KJ, Petersdorf RG, Wilson JD, Martin JB, Fauci AS, eds. Harrison's principles of internal medicine. 11th ed. New York: McGraw-Hill, 1987; 1638-43.
7. **Moor MR, Brodie MJ.** The porphyrias. *Med Int 1985*; **14**: 604.

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