

- in hematological disorders. *J Clin Pathol* 1982, 35: 257-284.
9. Kiraly JF III, Wheby MS. Bone marrow necrosis. *Am J Med* 1976, 60: 361-368.
 10. Ching Hon Pui, Sanford SS, Alexander G. Bone marrow necrosis in children with malignant disease. *Cancer* 1985, 56: 1522-1523.
 11. Kundel DW, Bacher G, Boday GP, Brittin GM. Reticulin fibrosis and bone infarction in acute leukemia. Implications of prognosis. *Blood* 1964, 23: 526-544.
 12. Islam A, Catousky D, Gatton DAG. Histological study of bone marrow regeneration following chemotherapy for acute myeloid leukemia and chronic granulocytic leukemia in blast transformation. *Br J Hematol* 1980, 45: 535-540.

Phantom Hernia—An Unusual Manifestation of Hypokalemia

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Phantom hernia is a term used to describe unilateral bulging on either side of the abdomen due to weakness or paralysis of abdominal wall muscles. This term was first used by Achar based on his observations in

cases of anterior poliomyelitis(1). The word "Phantom" is derived from the word "Phantasm" which means the mental imagery produced by fantasy (2).

We observed this unusual phenomenon of phantom hernia with generalized paresis in six cases of gastroenteritis complicated by hypokalemia which rapidly disappeared with intravenous potassium therapy.

Case Reports

Six cases of phantom hernia were seen over a period of 2 years at Sri Ramachandra Hospital, Porur, Madras. All the cases (Table I) were primarily admitted with acute gastroenteritis and one of them had phantom hernia as a presenting symptom. *Vibrio cholera* was proved to be the etiological factor in 2 of these 6 cases.

The common features among these cases were undernutrition, hypokalemia, phantom hernia, generalized hypotonia with paresis, and a complete rapid recovery over a period of 12 to 24 hours with intravenous potassium administration. All of them had been appropriately immunized with oral polio vaccine. ECG changes of ST segment

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TABLE I-Summary of Six Cases

Sl No.	Age (mo)	Nutritional status *	Serum potassium levelsTime interval**		
			(mmol/l)		(hours)
			Initial	Subsequent	
1.	12	Grade II	5.5***	2.2 (24 h)	24
				4.8 (48 h)	
2.	18	Grade III	2.1	2.7 (8 h)	18
				4.1 (24 h)	
3.	15	Grade IV	2.3	4.2 (24 h)	16
4.	9	Grade II	2.1	3.0 (16 h)	12
				4.2 (24 h)	
5.	12	Grade II	1.7	2.8 (8 h)	24
				4.1 (24 h)	
6.	11	Grade IV	1.6	3.2 (8 h)	16
				4.3 (24 h)	

* Indian Academy of Pediatrics Classification.

** Time interval between initiation of potassium replacement and disappearance of phantom hernia.

*** Phantom hernia and hypokalemia observed only 24 hours after hospitalization.

depression, and U waves consistent with hypokalemia were observed in 5 of these 6 cases. *Fig. 1a* shows the phantom hernia in Case 2 and *Fig. 1b* the roentgenogram showing a bulge.

Discussion

One of the common extrarenal causes of hypokalemia is diarrhea and a very low level of potassium is a feature of protein energy malnutrition. The marked hypokalemia in all our cases is due to a combination of malnutrition and diarrhea. Hypokalemia is known to produce weakness of muscles, paralysis, smooth muscle involvement leading to paralytic ileus and abdominal distension, and characteristic ECG changes. Clinical manifestations of hypokalemia are directly related to the total body potassium. It is estimated that a 1 millimole/litre decrease in serum potassium generally corresponds to

a loss of approximately 5-10% of body potassium. The clinical profile in our cases at the time of presentation and later at recovery correlate well with changes in the potassium equilibrium.

The only unusual feature in our cases is the unilateral involvement of abdominal muscles giving rise to a phantom hernia. Such a picture is more suggestive of the patchy paralysis of polio virus infection rather than a generalized electrolyte disorder. Hypokalemia is also known to produce muscle weakness which may be asymmetrical and patchy mimicking poliomyelitis(3). The presence of significant hypokalemia and the rapid recovery following potassium therapy distinguish the clinical picture from poliomyelitis.

It is of interest that the phantom hernia has occurred on the left side in all our cases.



Fig. 1a. Photograph of case 2 showing left sided phantom hernia (K^+ level-2.7mmol/L).

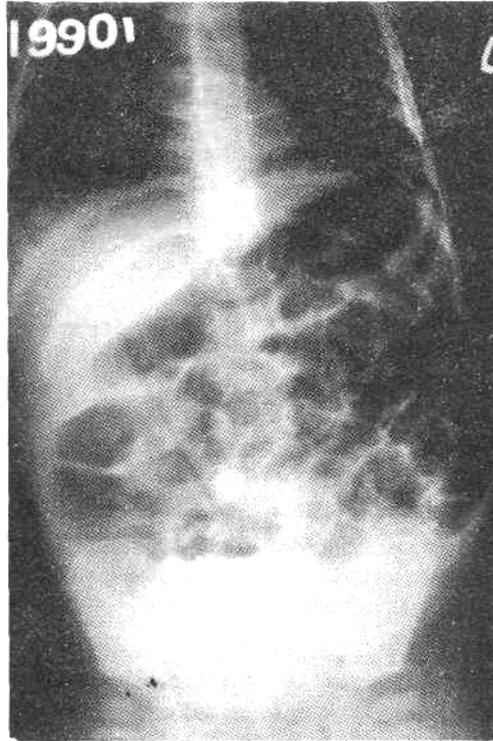


Fig. 1b. Roentgenogram showing bulging on the left side.

Though there is no rational explanation for the same, the presence of a solid organ like the liver on the right side may be a preventive factor for such an occurrence on the right side.

In conclusion it is worthwhile to remember that transient phantom hernia may be caused by conditions other than poliomyelitis.

REFERENCES

1. Vishwanathan J, Desai AB. Infections and

infectious diseases. *In*: Vishwanathan J, Desai AB. Achar's Textbook of Pediatrics, 3rd edn. Eds. Madras, Orient Longman, 1989, pp 351-352.

2. Hensyl WR. Stedman's Medical Dictionary, 25th edn. Baltimore, Williams and Wilkins, 1990, p 1177.
3. Hall D, Moosa A, Familuisi JB. Disorders of the central nervous system. *In*: Pediatrics in the Tropics, Eds. Hendrickse RG, Barr DGD, Matthews TS. Oxford, Blackwell Scientific Publication, 1991, p 509.