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Gastrointestinal Haemorrhage in Children: A Retrospective Study of 64 Cases

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Summary

Yakubu AM. Gastrointestinal Haemorrhage in Children: A Retrospective Study of 64 cases. *Nigerian Journal of Paediatrics* **1986; 13:133.** In a study of 64 children admitted to the Ahmadu Bello University Teaching Hospital, Zaria, with gastrointestinal bleeding over a 7–year period, it was found that the main causes of bleeding were portal hypertension (28.1%), infection (17.2%) haemorrhagic disease of the newborn (7.8%), neoplasm (6.3%) and aspirin ingestion (6.3%). Other causes of gastrointestinal bleeding were peptic ulcer, blunt abdominal trauma and liver abscess. No cause was identified in 25% of the cases. The mortality was 9.4% and was associated with severe anaemia, while the coexistence of underlying disorders such as cyanotic heart disease and systemic infection probably worsened the prognosis in others.

Introduction

UNTIL about two decades ago, the diagnosis and treatment of gastrointestinal bleeding in neonates and children were often unsatisfactory because the causes and sources of bleeding could not be identified in one third to a half of all cases.[1 3] This poor diagnostic capability existed because barium studies which were the only diagnostic techniques available, failed to demonstrate mucosal abnormalities in certain cases.[3-5] The development and application of endoscopy and selective abdominal angiography to paediatrics, have substantially improved our diagnostic ability and treatment of gastrointestinal haemorrhage.[5-6] In children, gastrointestinal bleeding may be a symptom of a recognisable syndrome such as cow's milk allergy or it may be the first and only manifestation of an underlying disease such as Meckel's diverticulum. The age of the patient may also be a useful guide to the source of bleeding.[7-8] The aim of this retrospective study was to evaluate the causes, management and outcome of gastrointestinal bleeding in a group of children.

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Materials and Methods

The records of all children admitted to the Paediatrics Department, Ahmadu Bello University Teaching Hospital, Zaria, from January 1978

to December 1984, with a history of gastrointestinal bleeding were evaluated.

Attention was focussed on the (*i*) age and sex of the patient, (*ii*) history of past gastrointestinal bleeding, trauma, drug ingestion, jaundice, umbilical sepsis and uvulectomy, (*iii*) presence or absence of abdominal pain, (*iv*) quantity of blood vomited or defaecated, (*v*) findings on clinical examination as well as investigations including endoscopic and sigmoidoscopic examinations and (*vi*) the treatment and outcome. Pertinent data reviewed included results of nasogastric aspiration to determine the presence or absence of blood in the stomach, blood culture, liver function tests, haemogram including platelet counts, estimation of coagulation factors as well as liver biopsies and barium studies.

In this study, haematemesis was taken to mean vomiting of fresh blood, while melaena indicated the passage of altered blood per rectum; haematochezia referred to the defaecation of frank blood. A reliable history of haematemesis was accepted as evidence of bleeding from the upper gastrointestinal tract. Nasogastric aspiration of blood was taken as further evidence that the bleeding site was above the ligament of Treitz. Absence of blood in the nasogastric tube did not exclude upper gastrointestinal bleeding but suggested that there was no clinical evidence of further bleeding. A history of uvulectomy or aspirin ingestion was found to be useful in indicating the site and aetiology of gastrointestinal bleeding in some cases. Passage of frank bright blood per rectum was accepted as indication of lower gastrointestinal haemorrhage.

Results

The records of 64 children comprising 41 males and 23 females seen during the 7-year period, were available for evaluation. The ages of the 11 neonates in the series, ranged from 2 days to 28 days while the older children were aged 1–11 years; none of the patients was aged between 29 days and 11 months.

Symptoms

The presenting symptoms of gastrointestinal bleeding are summarised in Table I. Of the 11 neonates, three presented with haematemesis and seven had melaena; one neonate had both haematemesis and melaena. In the older children, history of recurrent haematemesis was recorded in 10 patients, eight of whom had three episodes of bleeding for which they were hospitalised; the remaining two children had two episodes each. The interval between the bleeding episodes ranged from three months to one year. There was no history of fever, but abdominal pain at the time of admission, was recorded in five patients. Past medical history included neonatal umbilical sepsis in two cases and blunt abdominal trauma in one boy.

TABLE I

Presentations of Gastrointestinal Haemorrhage in 64 Children

Presentation	*No of Cases*	*% of Total*
Haematemesis	23	35.9
Melaena	11	17.2
Haematochezia	11	17.2
Haematemesis and melaena	19	29.7
Total	64	100.0

Signs

Significant signs were elicited in 40 patients. These were severe anaemia, shock and hepatosplenomegaly, as summarised in Table II.

Sites of bleeding

Based on the clinical features, 42 of the cases were classified as having upper gastrointestinal bleeding and 11 lower, while in the remaining 11, it was not possible to classify the sites of bleeding.

TABLE II

Physical Signs in 64 Children with Gastrointestinal Haemorrhage

Signs	*No of Cases*	*% of Total*
Pallor	22	34.4
Splenomegaly	14	21.9
Shock	10	15.6
Pyrexia	7	10.9
Hepatosplenomegaly	5	7.8

Quantity of blood loss

Assessment of blood loss by each patient was based on parents' account as well as on the physician's estimate if further bleeding occurred on admission. The amount of blood loss ranged from 5ml to 300ml in those in whom estimates were made.

Laboratory investigations

Blood cultures yielded *Staphylococcus aureus* in two cases, while *Klebsiella* and *Salmonella typhi G* were isolated in one case each, out of 14 in whom blood cultures were carried out. Out of 35 stool specimens examined for pathogens, the following positive results were obtained: *Shigella flexneri* (3 cases) *E histolytica* (2 cases) and *S mansoni* (2 cases).

Significant haematological abnormalities recorded were haemoglobin of 6gm/dl or less, in 22 out of 64 cases, haemoglobin SS in 2 of 53 cases aged 1 to 11 years, while there was leucocytosis of 13.8 x 10^9/L (13,800/cmm) and thrombocytopenia of 23.0 x 10^9/L (23,000/cmm) in one case each; the diagnosis of acute myeloblastic leukaemia was later made in the child with thrombocytopenia.

Barium studies

Barium meal was carried out in 26 cases. It was positive in 19 cases; it showed features of portal hypertension in 18 cases (Fig 1) and peptic ulcer in the remaining case (Fig 2). Barium enemas in 9 patients with rectal bleeding were unhelpful in demonstrating mucosal abnormalities.

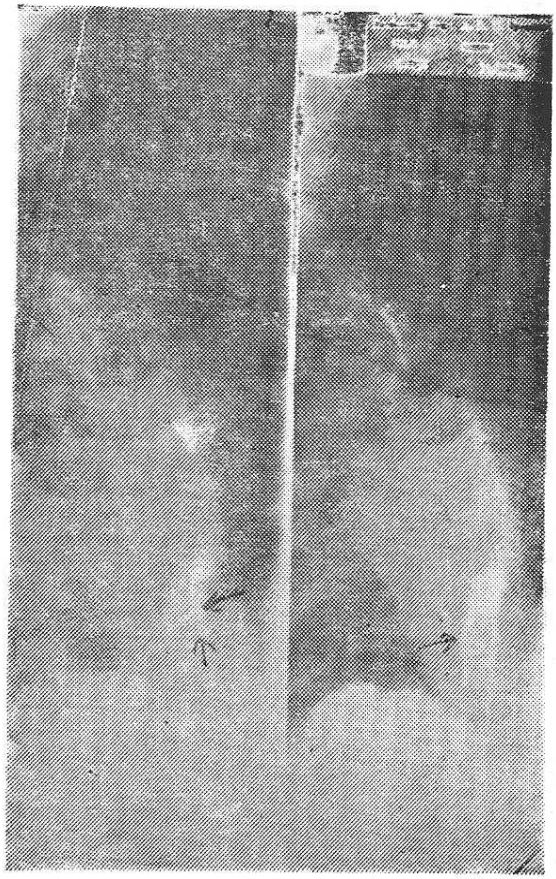

Fig 1. Cobweb appearance of barium meal in portal hypertension

Sigmoidoscopy in 9 patients with rectal bleeding established the diagnosis of rectosigmoid polyps in two patients, while endoscopic examination in two 6-year old children, confirmed gastric erosion due to aspirin.

Biopsies

Thirteen patients had liver biopsies. Histologic examination of these biopsies established the diagnosis of liver diseases in 10 patients. In 6 of these, the histopathology showed liver cirrhosis;

TABLE III

Causes of Gastrointestinal Haemorrhage in 64 Children

Age	*Cause*										*Total*
	PH	*Aspirin ingestion*	*Uvulec-tomy*	*Infection*	*HDN*	*Blunt Trauma*	*Tumour*	*Peptic ulcer*	*Liver abscess*	*Unknown*	
*2 - 28 days	-	-	3	3	5	-	-	-	-	-	11
*1 year	1	-	-	3†	-	-	-	-	-	-	4
2 years	1	2	-	4†	-	-	-	-	-	5	12
3 ,,	2	-	-	-	-	-	-	-	-	2	4
4 ,,	4	-	-	-	-	1	-	-	-	1	6
5 ,,	1	-	-	-	-	-	-	-	-	2	3
6 ,,	1	2	-	-	-	-	-	-	-	3	6
7 ,,	2	-	-	-	-	-	-	-	1	-	3
8 ,,	1	-	-	-	-	-	4	-	-	2	7
9 ,,	3	-	-	1	-	-	-	-	-	-	4
10 ,,	-	-	-	-	-	-	-	1	-	-	1
11 ,,	2	-	-	-	-	-	-	-	-	1	3
Total	18(28.1)	4(6.2)	3(4.7)	11(17.2)	5(7.8)	1(1.6)	4(6.2)	1(1.6)	1(1.6)	16(25)	64(100.0)

PH = Portal hypertension HDN = Haemorrhagic disease of the newborn
*No case was aged between 29 days and 11 months.
†Local mucosal infection
Figures in parenthesis are percentages

Discussion

In the present study, portal hypertension was the most common single cause of haematemesis in children. This finding is similar to those reported among caucasians.[3 9 10] However, unlike portal vein thrombosis which was the cause of portal hypertension in caucasians,[3 9 10] portal hypertension in this study was due to cirrhosis, pipestem schistosomal and congenital hepatic fibrosis. The onset of gastrointestinal bleeding due to blunt trauma ranges from hours to years [11 12] and the diagnosis may be missed at laparotomy.[13] The mechanism of bleeding is believed to be through haematobilia.[13]

Intra-abdominal tumours presenting primarily as gastrointestinal bleeding is rare.[14 15] A case of Burkitt's tumour presenting with massive rectal bleeding has been reported from this centre.[16] Polyp is a recognised cause of gastrointestinal bleeding,[17] while gastrointestinal bleeding due to leukaemia may be secondary to low platelet or coagulation factors. The mechanism by which systemic infection produces gastrointestinal bleeding is not clear but is speculated to be due to stress ulcer which results from sudden decrease of mucosal blood flow.[18 19] Such bleeding could result from a consumption of coagulation factors which occurs in disseminated intravascular coagulation.

The prognosis of gastrointestinal bleeding depends on a number of factors such as the severity and frequency of bleeding, the age of the patient, the presence or absence of coexisting medical disorder and the site of bleeding.[20] Portal hypertension due to cirrhosis has graver prognosis than that due to venous thrombosis because the diseased liver does not respond well to extended period of bleeding or surgical shunting procedures.[21] Medical treatment with propranolol has been recommended in these groups of patients.[22]

The mortality of 9% in the present series compares favourably with that reported in British children.[18] This mortality can be reduced if high risk patients are recognised early. Secondly, urgent blood replacement by transfusing if necessary, blood which has been cross-matched for only 30 minutes to one hour, is essential. In more advanced centres, central venous pressure monitoring during blood replacement, to judge the amount and rate of infusion, the use of blood filters and warmers and the readily available fresh plasma and platelet concentrates have significantly reduced the complications and mortality due to blood transfusions.[20]

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