Original Article

Access this article online
Website: www.afrjpaedsurg.org
DOI: 10.4103/0189-6725.137331
Quick Response Code:

Transanal protrusion of intussusceptions in children

Ezomike Uchechukwu Obiora, Ekenze Sebastian Okwuchukwu, Igwilo Innocent Ogundu

ABSTRACT

Background: The aim of the following study is to report our management experience and outcome of transanal protrusion of intussusceptions. **Patients and Methods:** Retrospective analysis of all cases of intussusceptions protruding through the anal opening from January 2008 to June 2013. **Results:** Of 62 cases of intussusceptions, transanal protrusion occurred in 10 patients (16% anal protrusion rate) with a male:female ratio of 2:3. They were aged 4-96 months (mean 22.6 ± 30.7, median 7.5 months). Six were infants while four were above 1 year. Duration of symptoms ranged from 2 to 14 days (mean 5.9 days ± 3.4) with only two patients presenting within 48 h. Clinical features included vomiting (100%), abdominal pains (100%), bloody mucoid stool (100%), abdominal distension (90%), and palpable left iliac fossa mass (70%). Three patients had preceding diarrhoea (30%) and two had preceding upper respiratory tract infection (20%). Duration of hospital stay ranged from 5 to 23 days (mean 12 days ± 5.6). Findings at surgery included seven ileocolic and two colocolic intussusceptions (one patient died before surgery). Operative procedures were right hemicolectomy (5), operative manual reduction (3), left hemicolectomy (1) giving a 67% bowel resection rate. One patient died giving a 10% mortality rate. **Conclusion:** Transanal protrusion occurred more in females and is associated with late presentation, older age, high bowel resection rate, and high mortality.

Key words: Children, intussusception, protrusion, transanal

INTRODUCTION

Intussusceptions, especially ileocolic types, are the most common cause of intestinal obstruction in infants worldwide. The apex of the intussusceptum may manifest as trans-anal protrusion presenting as a fleshy mass through the anal opening. Transanal protrusion of intussusceptions (TAPIs) is a unique complication of intusssusception in children and usually occurs when the normally retroperitoneal ascending and descending colons are freely mobile being completely peritonealised with long mesenteries.[1,2] TAPI is an uncommon presentation of childhood intussusceptions and most publications on this topic are case reports[1,3,4] and case series[2,5-7] from low and middle income countries of Africa and Asia.

Rectal prolapse, a more common entity in infants and older children, can be confused with TAPI. This confusion with rectal prolapse may cause delay in presentation to the surgeon and subsequently delay in proper management. High index of clinical suspicion and accurate knowledge of the distinguishing features between rectal prolapse and TAPI is required at the primary and secondary levels of healthcare for early diagnosis and prompt referral. Treatment of such patients may involve enema reduction,[7] manual reduction through laparotomy or bowel resection and anastomosis.

This study reported our management experience and outcome of TAPIs at the Sub-Department of Paediatric Surgery, University of Nigeria Teaching Hospital (UNTH), Ituku/Ozalla, Enugu, Nigeria.

PATIENTS AND METHODS

Retrospective analysis of all cases of intussusceptions protruding through the anal opening and presenting to UNTH from January 2008 to July 2013. The patients' folders were retrieved and the following clinical data manually extracted: Age, sex, duration of symptoms, major symptoms, intraoperative findings, surgery done, postoperative complications, duration of hospital stay, and mortality. Those whose folders could not

Sub-Department of Pediatric Surgery, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu, Nigeria

Address for correspondence:
Dr. U. O. Ezomike,
Sub-Department of Pediatric Surgery, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu, Nigeria. E-mail: ezomikeuche@yahoo.com

be retrieved were excluded. Data entry and analysis were done with Statistical Package for Social Sciences (SPSS 15.0 version, SPSS Inc., Chicago, IL, USA). Some clinical indices in these patients were compared with similar indices in cases of intussusceptions with no transanal protrusion. Test for significance was done using two-tailed Fisher's exact test for discrete variables and paired Student's *t*-test for continuous variables. The results are presented as means ± standard deviations, median, percentages and tables, $P < 0.05$ being adjudged significant.

RESULTS

Of 62 cases of intussusceptions diagnosed within the study period, transanal protrusion occurred in 10 patients (16% anal protrusion rate) with a male:female ratio of 2:3. They were aged 4-96 months (median 7.5 months, mean 22.5 months ± 30.7) and weighed 5.8-25 kg (median 8.05 kg). Six (60%) were infants while four were above 1 year (40%) as shown in Table 1. Duration of symptoms ranged from 2 to 14 days (mean 5.9 days ± 3.4). Only two patients presented within 48 h (20%) of onset of symptoms [Table 2]. Main clinical features included vomiting (100%), colicky abdominal pains (100%), bloody mucoid stool (100%), abdominal distension (90%), fever (90%), and palpable left iliac fossa mass (70%). Hence, 100% had the triad of abdominal pains, vomiting, red currant jelly stool and only 70% had the classical quartet of abdominal pains, vomiting, rectal bleeding, and palpable abdominal mass. Three patients had preceding diarrhoea (30%) and two had preceding upper respiratory tract infection (20%) while nine patients had fever (90%). Time to intervention was from 1 to 4 days (mean 1.75 ± 1.16). Six patients were transfused (60%). All patients who presented after 48 h (8/10) have visited a healthcare provider before coming to our hospital. Findings at surgery [Table 2] included seven ileocolic and two colocolic intussusceptions (one patient died before surgery and as such the site of intussusceptions was not determined). Operative procedures [Table 3] were right hemicolectomy (5), operative manual reduction (3), left hemicolectomy (1) giving a 67% bowel resection rate. Duration of hospital stay ranged from 5 to 23 days (mean 12 days ± 5.6). One patient died giving a 10% mortality rate.

Table 1: Age and sex distribution of patients

Age	Male	Female	Total
0–12 months	1	5	6
>12 months	3	1	4
Total	4	6	10

Table 2: Findings at surgery and duration of symptoms

Findings at surgery	Number of patients	Symptom duration (days)
Reducible ileocolic intususception	2	5 (average)
Reducible colocolic intussusceptions	1	5
Irreducible ileocolic intususception	4	5.5 (average)
Irreducible ileocolic intussusceptions with transverse colon perforation	1	6
Gangrenous colocolic intussusceptions	1	14
No surgery	1	2

Table 3: Operative procedure and number of patients

Operative procedure	Number of patients
Operative manual reduction	3
Right hemicolectomy	3
Extended right hemicolectomy	2
Left hemicolectomy	1
No surgery (died before surgery)	1
Total	10

DISCUSSION

Transanal protrusion is an uncommon manifestation of childhood intussusceptions with anal protrusion rates ranging from 8%,[7] 10.8%[8] and 11%[9] to 29%[5] in different previous studies. In the current study, the anal protrusion rate is 16%.

There is a relatively higher proportion of females than males with TAPI in the current study (male: Female = 2:3) and this is corroborated by other case series.[2,5] Likewise, most case reports of TAPIs occurred in female children[4] and adults.[1,10] These statistics are in contrast to childhood intussusceptions in general where males are usually more affected than females.[8,11,12] The reason for this is not readily known and intestinal malrotation, which is common in patients with TAPIs is not more common in females.[9]

The average age at presentation for TAPI is higher than in those with no transanal protrusion [$P = 0.008$, Table 4]. In other series average ages ranged from 5 to 12 months.[2,7] Furthermore, a greater percentage of TAPIs were aged greater than one year(40%) when compared with only 5.8% in those without transanal protrusion of intussusception [$P = 0.01$, Table 4].

Transanally protruding intussusceptions are mainly of the ileocolic type[7] and mobile cecum, persistent mesentery of ascending and descending colon predispose to this condition.[1,10] Increased intestinal peristalsis may encourage rapid progression of the intussusceptum to the rectum[7] as seen with bowel inflammation following diarrhoea or respiratory

Table 4: Comparison of some clinical indices

Clinical Indices	Transanal protrusion (%)	No transanal protrusion (%)	*P* value
Age range (months)	4-96	4-60	
Average age (months)	22.6±30.6	8.52±9.52	0.008
≤1 year:>1 year (percentage greater 1 year)	3:2 (40)	17.3:1 (5.8)	0.01
Male:female ratio	2:3	2.3:1	0.14
Duration of symptoms (range)	2-14 days	3 h-14 days	
Average duration of symptoms (days)	5.90±3.4	3.70±2.84	0.03
Percentage presenting ≤48 h of symptoms	20	42.3	0.29
Bowel resection rate (%)	67	46	0.73
Average duration of hospital stay (days)	12±5.6	10.96±7.95	0.55
Mortality rate (%)	10	3.8	0.42

infection with viraemia. In the current study, 50% of patients had either respiratory infection or diarrhoea preceding onset of intussusceptions.

From most previous studies,[2,5,6] it seems transanal protrusion is a manifestation of late presentation in ileocolic intussusceptions in childhood, but in the current study and from Ramachandran *et al*.[7] some transanal protrusion occurred in those presenting within 48 h of onset of symptoms. It is likely that anatomical defects like nonfixation of ascending and descending colons predispose to transanal protrusion but delay in treatment allows time for transanal protrusion to occur.

All had bilious vomiting, abdominal pains, passage of bloody mucoid substance per rectum, 90% had abdominal distension, and 70% had palpable abdominal mass. Classical quartet of symptoms consisting of abdominal pains, vomiting, rectal bleeding, and palpable abdominal mass was seen in 70% of all with transanal protrusion. This high rate of classical symptom manifestation is higher than in some other series.[5]

In this study, transanally protruded intussusceptions involved both ileocolic as well as colocolic intussusceptions [Table 2] unlike most other case series which reported only transanal ileocolic intussusception.[2,5,6,9] Though Tennant and Halliday[13] as well as Torres and McCafferty.[14] reported transanal protrusion of colocolic intussusceptions , this is a less common presentation than protruding ileocolic intussusception.

Time to presentation in this series (mean of 5.9 days) is higher than 3.7 days in those with no transanal protrusion ($P = 0.03$,Table 4) but lower than figures of 21 days[5] and 45 days[2] in some other series. In Ramachandran *et al*. most of patients (87.5%) presented within 48 h while in this only 20% presented within 48 h of onset of symptoms.

Surgery through a laparotomy was the preferred treatment protocol in many previous reports[2,5,6] but in a case series by Ramachandran *et al*. in India[7] many patients with TAPI had air enema reduction and only 8/16 patients (50%) had laparotomy with manual reduction or bowel resection. In the current study, an unsuccessful attempt at ultrasound guided saline hydrostatic reduction in one patient who presented within 48 h necessitated laparotomy and successful manual reduction.

In the current study, bowel resection rate of 67% is high though comparable to values of 67% by Ibrahim in Egypt[6] and 50% by Ngom *et al*. in Dakar.[2] This is however higher than 19% by Ramachandran *et al*. in India[7] and 46% in those without transanal protrusion. This difference in bowel resection rates may be explained by late presentation in these series as there was low bowel resection rate in Ramachandran *et al*. where only 12.5% (2/16) presented more than 48 h after onset of symptoms.

Colocolic intussusceptions occurred in 22% (2/9) of TAPI and in 2% (1/46) of those with no transanal protrusion where type of intussusceptions was determined at surgery ($P = 0.06$). Though not statistically significant, this apparently higher incidence of colocolic intussusceptions in TAPI was not reported in many other series.[2,5,6]

There is a relatively high mortality (10%) in this series when compared with mortality statistics from India[7] and Egypt[6] but lower than figures from some other parts of Nigeria.[5]

Limitations of study

This is a retrospective case series and significant conclusions may not be drawn from it due to the small number of patients. Review of literature similarly revealed mainly case series and case reports on this topic.

CONCLUSION

Transanal protrusion of intussusceptions may mimic rectal prolapse in children. From this study it occurred more in females, is associated with delayed presentation, averagely older age at presentation, higher bowel resection rate and higher mortality rate when compared with those cases of intussusceptions without transanal protrusion.

REFERENCES

1. Ongom PA, Lukande RL, Jombwe J. Anal protrusion of an ileo-colic intussusception in an adult with persistent ascending and descending mesocolons: A case report. BMC Res Notes 2013;6:42.
2. Ngom G, Fall I, Sankale AA, Konate I, Sagna A, Ndoye M. Prolapsed intussusception in children: A report of 4 cases. Afr J Paediatr Surg 2005;2:17-9.
3. Ray A, Mandal KC, Shukla RM, Roy D, Mukhopadhyay B, Bhattacharya M. Neglected intussusception presenting as transanal prolapse of small bowel. Indian J Pediatr 2012;79:1370-1.
4. Coghill J, Mensah. Anal protrusion of intussusception. BMJ Case Rep 2009;2314.
5. Ameh EA, Mshelbwala PM. Transanal protrusion of intussusception in infants is associated with high morbidity and mortality. Ann Trop Paediatr 2008;28:287-92.
6. Ibrahim IA. Prolapsed ileocolic intussusceptions. Ann Pediatr Surg 2011;7:76-8.
7. Ramachandran P, Vincent P, Prabhu S, Sridharan S. Rectal prolapse of intussusception — A single institution's experience. Eur J Pediatr Surg 2006;16:420-2.
8. Keita M, Barry OT, Doumbouya N, Diallo AF, Toure BM, Balde I. Acute Intussusception in childhood: Aspects of epidemiologic, Clinical features and management at Children's Hospital, Donka, Guinea Conakry. Afr J Paediatr Surg 2006;3:1-3.
9. Chirdan LB, Uba AF. Association of midgut malrotation with intussusceptions. Nigeria J Surg Res 2005;7:159-61.
10. Frydman J, Ben-Ishay O, Kluger Y. Total ileocolic intussusception with rectal prolapse presenting in an adult: A case report and review of the literature. World J Emerg Surg 2013;8:37.
11. Ugwu BT, Legbo JN, Dakum NK, Yiltok SJ, Mbah N, Uba FA. Childhood intussusception: A 9-year review. Ann Trop Paediatr 2000;20:131-5.
12. Nmadu PT. The changing pattern of infantile intussusception in northern Nigeria: A report of 47 cases. Ann Trop Paediatr 1992;12:347-50.
13. Tennant S, Halliday K. Intussusception mimicking rectal prolapse. Pediatr Radiol 2008;38:700-2.
14. Torres ML, McCafferty MH. Rectosigmoid intussusception through the anus mimicking rectal prolapse. Am Surg 2010;76:718-20.

Cite this article as: Obiora EU, Okwuchukwu ES, Ogundu II. Transanal protrusion of intussusceptions in children. Afr J Paediatr Surg 2014;11:229-32.

Source of Support: Nil. **Conflict of Interest:** None declared.