

Original Article

Itinerary of children in the management of intussusception: the true reasons of delayed medical care in a west African country

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ABSTRACT

Background: The delayed medical care of intussusception is still the reason for morbidity and mortality in many developing countries. The objective of this study is to take stock of the itinerary of children treated for intussusception, in order to reduce the delay of the treatment.

Methods: This is a cross-sectional study, carried over three years (from 1st June 2016 to 31 May 2019), at a Paediatric Surgery department of Campus Teaching Hospital in Lomé (Togo). The medical record of 23 children whose median age was 12 months, were included. Symptoms, the average time before the first consultation, different health centres consulted and treatment received, and the average time before the admission in the specialised department were studied.

Results: In three years, 23 children were managed for intussusception. The average time before the first consultation from home in a health centre was 1.87 days. No patient was admitted to the Paediatric Surgery department directly from home. Twelve patients consulted one centre, eight patients 2 centres, and one patient 3 centres before admission. Before referral, these patients were misdiagnosis as gastro-enteritis in 8 cases (38.10%), malaria in 8 cases (38.10%), and digestive salmonellosis in 3 cases (14.29%). The time elapsed between the beginning of the disease and the admission in specialised service was on average 5.39 days and 3.52 days elapsed then between the first consultation from home and the admission to the Paediatric Surgery service.

Conclusion: Valuable time to manage intussusceptions is lost in other medical health services before admission to specialised services. Action on this route will have to be taken through an effective counter-referral system.

Keywords: Intussusception, Children, Intestinal obstruction.

INTRODUCTION

Intussusception is the most frequent abdominal emergency in children of less than 3 years. [1] It has a worldwide incidence that varies from 15 to 300 over 100,000 children per year. [2] It is a diagnostic and therapeutic emergency for which Gross' observation [3] remains true until today: "the time interval between the beginning of symptoms and the institution of treatment is of a prime importance, and more the treatment will be done in the 24 hours, the closer the mortality rate will be to zero." A diagnostic and therapeutic delay may lead

to intestinal necrosis and even to death. This delay is an important cause of surgical treatment by laparotomy, intestinal resection, and a significant mortality rate, which may go up to more than 25% [2,4,5] in countries with limited resources. This problem of delayed medical care found its solution in the advanced countries where the current debates on intussusception are rather dominated by the identification of the best non-operative method, the reduction of the conversion rate in the surgical treatment by laparoscopy, the necessity or not of preoperative antibiotic prophylaxis and the prevention of the mortality which is already less than 1%. [6-9]

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However, in many countries with limited resources, the current debate on intussusception is still dominated by the “delay of treatment”. [5,10-12] Parents’ ignorance and the lack of financial means to have access to quality healthcare, the late reference to specialised services by some health practitioners are the reasons often given to justify this delayed treatment. The aim of this study is to take stock of the itinerary of patients treated for intussusception, in order to organise actions to reduce the delay of the treatment upstream of specialised services.

METHODS

It is a cross-sectional study carried out at a Paediatric Surgery service of a developing country, from 1st June 2016 to 31 May 2019, after taking IRB approval. This period corresponds to the first three years of surgical activity of the department. Patients of both sexes, aged between 0 and 15 years who had had an intussusception and who were treated at the Paediatric Surgery department, were included in the study. The patients whose files were not found or whose files did not contain sufficient information were not included. The diagnosis of the intussusception was made on sonographic finding of “bull’s-eye” or the diagnosis was made at laparotomy.

The record of total of 23 children (14 boys and 9 girls) with intussusception was analysed. The children’s average age is 12 months (range 3 months to 72 months). Symptoms, the average time before the first consultation, different health centres consulted and the treatment received, the average time before the admission in the specialised service and the types of admission, treatment in the specialised service, and their results were studied. A delay in treatment is considered if patient did not receive specific treatment for more than 24 hours after beginning the symptoms..

RESULTS

In three years, 23 cases of intussusception were managed. The symptoms were abdominal pain in 17 cases (73.91%), vomiting in 18 cases (78.26%), the refusal of breastfeeding in 15 cases (65.22%), rectal bleeding in 18 cases (78.26%), and abdominal distension in 5 cases (21.74%). Considering the associations of functional symptoms, we noted that no patient had only one sign. The functional triad (abdominal pain, vomiting, and rectal bleeding) was found in 11 cases (47.83%). The association of abdominal pain and vomiting was noted in 9 cases (39.13%) and the association of abdominal pain and rectal bleeding in 3 cases (13.04%).

The average time before the first consultation in a health centre was 1.87 days (range 6 hours to 21 days). Seven patients (30.43%) were consulted in the first 24 hours after the beginning of the symptoms. Sixteen patients (69.57%) had been late in their first consultation. No

patient was admitted to the Paediatric Surgery service directly from home; they had consulted at least a health centre. The nature of centres consulted was mentioned in the files of 21 patients (91.30%). In the files of two patients, information concerning the nature of centres consulted was not mentioned. Twelve patients consulted one centre, eight patients 2 centres successively and one patient 3 centres successively. The consulted centres were medico-social health centres, clinics and doctor’s offices, district health centres, regional health centres, and Paediatric services in Teaching Hospitals. Figure 1 shows the distribution of patients according to the health centres consulted before their admission to the Paediatric Surgery services without taking into account their order of consultation. Figure 2 shows the layout of patients according to the centres consulted at the first, second, or third intention.

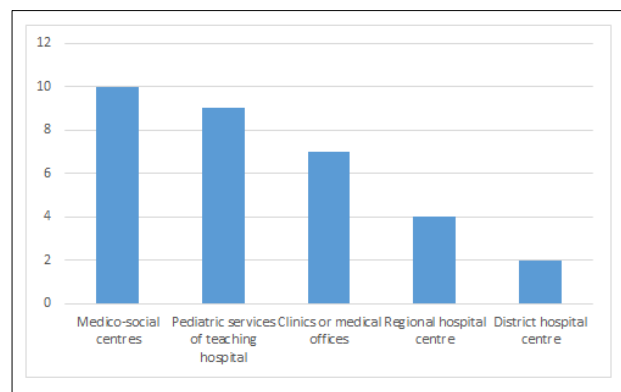


Figure: 1 Distribution of patients according to the health centres consulted before their admission to the paediatric surgery service without taking into account their order of consultations

In these different centres, the diagnosis treated, were gastro-enteritis in 8 cases (38.10%), malaria in 8 cases (38.10%), digestive salmonellosis in 3 cases (14.29%), and amoebic dysentery in 1 case (4.76%).

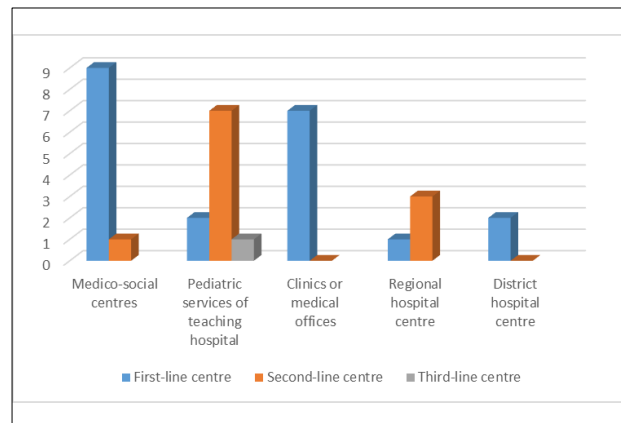


Figure: 2 Layout of patients according to the centres consulted at first, second or third thought

The cause for referring or transferring to the Paediatric surgery services was specified in the file of the 21 patients (91.3%). The reason was intussusception

confirmed through abdominal echography in 18 cases (78.26%) and intestinal occlusion in 3 cases (13.04%).

The time elapsed between the beginning of the symptoms and the admission to the paediatric surgery service of the Campus Teaching Hospital, was on average 5.39 days (range 24 hours to 21 days).

Considering the two average times, the one between the beginning of the symptoms and the admission to the Paediatric Surgery service (5.39 days) and the second between the beginning of the symptoms and the first consultation in a health centre (1.87 days), we noted that 3.52 days elapsed then between the first consultation and the admission to the paediatric surgery service. This time was spent by the consultation of health centres before the admission to the Paediatric Surgery service. Figure 3 represents the curve of these time limits according to each of the 23 patients.

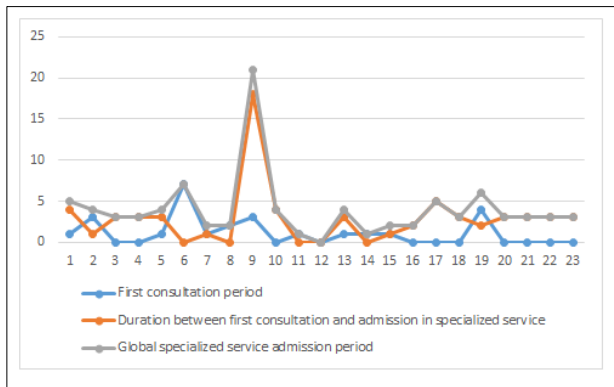


Figure: 3. Curve comparing first consultation period and global specialized service admission period according to each of the 23 patients

This figure reveals that the curve of the admission time to the Paediatric Surgery service is in proportion to the elapsed time between the first consultation and the admission to the paediatric surgery service.

The treatment period was 6.46 days on average (range 1 day to 21 days).

The non-operative treatment could be provided in 8 patients (34.78) but due to the lack of the required equipment these were treated operatively; and in the remaining patients only operative intervention was indicated due to bad general condition and fever in 13 patients (56.52%), and intussusception pudding perceived in the rectum in one patient (4.35%), and in another patient (4.35%) with abundant rectal bleeding.

The reduction of the intussusception by reduction by taxis was tried in all cases. It succeeded in 17 patients (73.91%). In 6 patients (26.09%), the manual reduction was either impossible or incomplete due to gut necrosis. The intestinal resection was done in 16 patients (69.57%) and appendectomy was done in 7 patients (30.44%).

The indications of intestinal resection and anastomosis were uncertain viability or bowel necrosis in 10 cases (43.48%) and the incomplete reducibility of the intussusception in 6 cases (26.09%). One patient had a double intestinal resection and anastomosis, one at ileo-caeco-colic and the other at transverse colon levels. Two patients had an isolated ileal resection and anastomosis and underwent also an appendectomy.

One patient (9-month-old) also had colon repair in addition to the intestinal anastomosis; the patient had an ileo-caeco-colic intussusception. A transverse colotomy was made which helped in reduction of the intussusception and gained 10 cm of additional length of colon.

The follow-up was uneventful in 18 patients (78.26%) and complicated in 5 patients (21.74%):

- Anastomotic leak leading to postoperative peritonitis occurred in one patient who initially underwent an ileal resection and ileo-ileal anastomosis. This patient needed end-to-end ileocolic anastomosis on the seventh postoperative day. Further follow-ups were uneventful.
- An abdominal wall infection occurred in one patient which was managed with antiseptic dressings of the wound. The resultant scar was wide and hypertrophic.
- Intestinal evisceration occurred in 2 cases due to wound dehiscence required re-closure of the wound. Further follow-up was uneventful.
- A 4 month-child died on the first postoperative day due to multiple organ dysfunction.

DISCUSSION

Intussusception, after appendicitis, is the second most frequent cause of acute abdominal pain in children [13,14], and the first cause of acute intestinal obstruction in young children. [15] The abdominal pain occurs in 72 to 95 % of cases. [5,13,16] These paroxysmal abdominal pains appear suddenly in previously healthy infant leading to inconsolable cry. The painful episodes repeat with an interval of 15 to 20 minutes and within these episodes, the infant may be asymptomatic. These painful episodes are followed, in 60 to 90 % of cases, by vomiting. [13] Two other classical signs, a palpable abdominal mass, and rectal bleeding raise suspicion of intussusception. [13] These symptoms are quite noticeable and parents usually sought clinical consultation early. In our series, the average time to the first consultation was 1.87 days with a minimum of 6 hours. This is close to data from other authors where the diagnosis is usually done in the 24 hours, on the basis of the 4 signs mentioned above. [17] When the paroxysmal abdominal pain recurs, it renders an easy diagnosis that can be made even before the first 8 hours of the disease. But in our study, although patients consulted even in

the six hours after the start of the symptoms, the diagnosis was not made early. The diagnosis should be made within 24 hours to avoid complications. We can propose two explanations for delayed diagnosis: either the first health practitioners in contact with the children did not know about this entity, or the ultrasonography was difficult to access due to financial constraints. The retrospective nature of our study does not allow us to answer these questions with conviction. But the diagnosis considered in the health centres consulted before the admission to the special service, proves the lack of knowledge about intussusception. Gastroenteritis, malaria, and salmonellosis were the initial working diagnoses. The lack of knowledge about intussusception caused the diagnostic delay. We also noted that 78.26% of children reached the special service with the diagnosis of intussusception confirmed on ultrasound and 8.70% came with the diagnosis of intestinal obstruction, as the reason for referral. The intussusception diagnosis was finally made in the first and second centres consulted, before the transfer to the specialised service. The diagnosis of intussusception was finally made when the disease worsened and or when the treatment according to the diagnosis failed. It seems that the disease is not totally unknown but it requires strong index of suspicion.

To look through the itinerary of the children treated for intussusception had enabled us to note that the precious time was mostly wasted in the consulted centres before the admission to the specialised services. This is proved by the proportionality of the curve of the global deadline of admission to the specialised service and that of the time that elapsed since the first consultation until the arrival in the specialised service. This was not immediately conceivable without making them part of the period of the first consultation and the time elapsed between the first consultation and the admission to the specialised service. Some authors also noticed similar reasons for the delay in diagnosis as resulting from the ignorance of parents and the delay of referral in the developing countries. [18-20]

REFERENCES

1. Applegate KE. Intussusception in children: evidence-based diagnosis and treatment. *Pediatr Radiol.* 2009; 39:140-3.
2. Jiang J, Jiang B, Parashar U, Nguyen T, Bines J, Patel MM. Childhood intussusception: a literature review. *PLoS One.* 2013; 8:e68482.
3. Gross RE. *The surgery of infancy and childhood: Its principles and techniques.* Chicago: WB Saunders Philadelphia; 1953.
4. Ekenze SO, Mgbor SO. Childhood intussusception: The implications of delayed presentation. *Afr J Pediatr Surg.* 2011; 8:15-8.
5. Akakpo-Numado GK, Boume MA, Gnassingbe K, et al. Management and prognosis of intussusceptions in children at the Tokoin Teaching Hospital in Lomé (Togo). *J Afr Chir Digest.* 2012; 12:1274-80.
6. Charles T, Penninga L, Reurings JC, Berry MCJ. Intussusception in Children: A Clinical Review. *Acta Chirurgica Belgica* 2015; 115:327-33.
7. Xiaolong X, Yang W, Qi Wang, Yiyang Zhao, Guobin Chen, Bo Xiang. A randomized trial of pneumatic reduction versus hydrostatic reduction. *J Pediatr Surg* 2018; 53:1464-68.
8. Kelley-Quon LI, Arthur LG, Williams RF, Adam B. Goldin, Shawn D. St. Peter, Alana L. Bere. et al. Management of Intussusception in Children: A Systematic Review. *J Pediatr Surg.* 2020; 56: 587-96.
9. Edwards EA, Pigg N, Courtier J, Zapala MA, MacKenzie JD, Phelps AS. Intussusception: past, present and future *Pediatr Radiol* 2017; 47:1101-08.

In our series, medico-social health centres were the first-line centres to be consulted followed by the paediatric services of the Teaching Schools. Health practitioners should consider intussusception in earlier differential diagnoses. Sending systematic feedback to the centres of origin could be the first solution. A well-organized referral and counter-referral system would make this easy. In our context, lack of digital health communication system and deficient man-power do not favour this solution at the moment. We suggest that for the counter-referral telephones are good means to send feedback. This instructive feedback can enable us to radically change our practice and improve the early diagnosis. Solving the problem of delayed diagnosis will significantly improve the morbidity and mortality in our patients with intussusception.

CONCLUSION

The diagnostic and therapeutic delay in the management of intussusceptions remain a reality in our context. It is not necessarily related to the delay in the first consultation but rather to the fact that valuable time is lost between the first consultation and admission to the specialised service. Improving the referral and counter-referral system may be a solution that can strengthen the capacity of the first health practitioners in contact with such conditions.

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10. Talabi AO, Sowande OA, Etonyeaku CA, Adejuyigbe O. Childhood intussusception in Ile-Ife: What has changed? *Afr J Paediatr Surg* 2013; 10:239-42.
11. Chalya PL, Kayange NM, Chandika AB. Childhood intussusceptions at a tertiary care hospital in northwestern Tanzania: a diagnostic and therapeutic challenge in resource-limited setting. *Ital J Pediatr* 2014; 40:28.
12. Ogundoyin OO, Olulana DI, Lawal TA. Childhood intussusception: Impact of delay in presentation in a developing country. *Afr J Paediatr Surg* 2016; 13:166-9.
13. Wasseem M, Rosenberg HK. Intussusception. *Pediatr Emerg Care* 2008; 24:793-800.
14. Applegate KE. Intussusception in children: evidence-based diagnosis and treatment. *Pediatr Radiol* 2009; 39:140-43.
15. Ito Y, Kusakawa I, Murata Y, Ukiyama E, Kawase H, Kamagata S, Ueno S, Osamura T, Kubo M, Yoshida M. Japanese guidelines for the management of intussusception in children. *Pediatr Int* 2012; 54:948-58.
16. Ajao AE, Lawal TA, Ogundoyin OO. Clinical predictors and outcome of bowel resection in paediatric intussusception. *Afri Health Sci.* 2020; 20:1463-70.
17. Columbani PM and Scholz S. Intussusception. In : Coran AG, Adzick NS, Krummel TM, Laberge JM, Shamberger RC, Caldamone AA, editors. *Pediatric surgery*, Philadelphia. 2012; 1093-1110.
18. Tareen F, Ryan S, Avanzini S, Pena V, Mc Laughlin D, Puri P. Does the length of history influence the outcomes of pneumatic reduction of intussusception in children? *Pediatr Surg Int* 2011; 27:587-89.
19. Beres AL, Baird R. An institutional analysis and systematic review with meta-analysis of pneumatic versus hydrostatic reduction or pediatric intussusception. *Surgery* 2013; 154:328-34.
20. Digant SM., Rucha S, Ekta D. Ultrasound guided reduction of an ileocolic intussusception by a hydrostatic method by using normal saline enema in paediatric patients : A study of 30 cases. *J Clin Diagn Research* 2012; 6:1722-25.