

EARLY DIAGNOSIS OF INTESTINAL INTUSSUSCEPTION IN THE NEW-BORN BABIES AND INFANTS#

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Abstract

Intestinal intussusception can be regarded today as a classical problem, although largely solved. All the experts were concerned to know this disorder, so that they can establish an early diagnosis and start an appropriate treatment. Intussusception can be seen in all ages, but more often in small children and especially infants between 4-10 months.(1,2) Infants are, usually, eutrofical. Intussusception occurs when the child's condition seems perfectly alright, but a properly examined medical history will shows the existence of a coryza or diarrhea.(3,4).

In explaining the production of intestinal intussusception, the following determinant and contributing factors are considered responsible:

Favouring factors:

- Abnormal growth of ECSC-colic region;
- ECSC-delay in setting of the colon;
- Change of diet;
- Seasonal diarrhea that causes mesenteric adenopathies generating vasomotor disturbances.(4,5)

Determinant factors:

The intestinal peristalsis explained by Reilly by allergising the mesenteric lymphs with bacterial or viral toxins. This allergic reaction can cause a tumoral ulcerative-necrotic mesenteric adenopathy, and vascular disorders with transudate in the peritoneal cavity.(6)

In establishing the early diagnosis an important role is played by clinical examination and laboratory examinations that include: ultrasound, Doppler ultrasound, x-ray, with contrast barium enema, computed tomography.

Key words: intussusception, early diagnosis, laboratory examination, mesenteric lymph nodes.

Introduction

Intestinal intussusception is one of the most common causes of acute surgical abdomen in infants and small children, with an incidence of 1.5 to 4 per 1000 children (1,2,3). Intussusception is produced by “telescoping an intestinal segment in the underlying segment” (4,5,6) by two known mechanisms - prolapse or inversion. It occurs most frequently between 6th and 24th months of life, in this age group being considered idiopathic and favored by an “increased intestinal peristalsis”(4,6). In the case of older children it usually reveals the existence of a mechanical cause, which is the starting point for intussusception. The

vast majority of cases of intussusception are ECSC-ileocolic, although it can have any location, produced by “telescoping the colon and ileum (1,2,4).

The progress of imagistic methods has made this condition easily recognizable, even though, in the past it was difficult to diagnose and was associated with morbidity and mortality. Early diagnosis and appropriate treatment have considerably improved the prognosis of this disease, “mortality from intestinal intussusception being less than 2%.”(1,2) However, there is a large percentage of cases in which the diagnosis is established late, requiring a difficult surgery, extensive bowel resection, these cases involving high morbidity and sometimes evolving unfavorably towards exitus.(3,6)

The aim of the paper

The paper intends to clarify the idea that intestinal intussusception is a surgical emergency that should be known by many doctors and, in particular by the GP, for he/she is the first to see the sick child and the prognosis of this condition depends on his/her early diagnosis.

The best possible training and knowledge of the disease correlated with a close collaboration improves the surgical prognosis of the disease.

It's important for most pediatricians to know all the signs of the disease, so that it can be recognized on time, and the child sent to the surgeon; after a diagnosis of certainty and investigations, the proper treatment is applied.

Treatment of intestinal intussusception is not a problem today, and the children, who are sent immediately to surgery, after the onset of the disease, are treated with good results.

Material and method

The author carried out a retrospective study on a group of 30 patients hospitalized between January 2000 and December 2010 with the diagnosis of intestinal intussusception. It examines the clinical symptoms, their duration, the existence of underlying diseases, diagnostic methods, conservative or surgical treatment and evolution of these patients, in order to emphasize the importance of early diagnosis and highlight the difficulties in recognizing the disease. Diagnostic methods used were clinical history, physical examination and paraclinical diagnosis - supported by abdominal ultrasound, native abdominal X-ray and enema with contrast substances.

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Results

The study group consists of 8 girls (23%) and 22 boys (77%),(Fig.No.1) high prevalence of disease is observed in males. Their origin environment was: 12 patients (44.66%) in urban and 18 patients (55.33%) in rural areas. This difference is not statistically significant, except that all cases were presented early in the service of pediatric surgery (7 cases in the first 12 hours), came from urban areas, due to a greater accessibility to medical services. (fig.No.2)

The age of the patients from the study group varied between 7 weeks and 1 year , with a higher frequency for the infants, especially after the first 6 months of life.

Clinical symptoms were varied. Although classically described in the literature, the classic symptomatic triad (“colicky abdominal pain, bloody stools, palpable abdominal tumor”) (4,6), the combination of pain-bloody

stools has been described in a relatively small number of patients (15 - 50%) and intussusception tumor was palpable in one patient. The symptoms were the following: (fig.No.3)

- abdominal pain in 15 cases (50%);
- bloody stools in 14 cases (46,66%);
- diarrhea in 3 cases (10%);
- food/bilious vomiting 24 cases (80,66%);
- altered general condition in 18 cases (60,66%);
- refusal to eat in 10 cases (34,66%);
- lack of transit for faeces 3 cases (10%);
- haematemesis 1 case(3,33%);
- palpable abdominal tumor case in 1 case (3,33%);
- seizures in 1 case (3,33%).

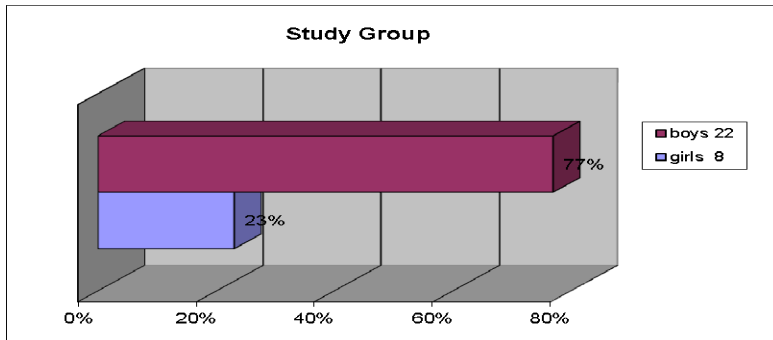


Fig.No.1 The study group.

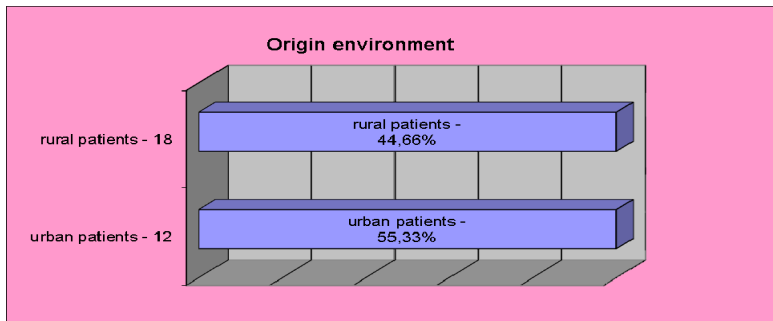


Fig.No.2 Origin environment.

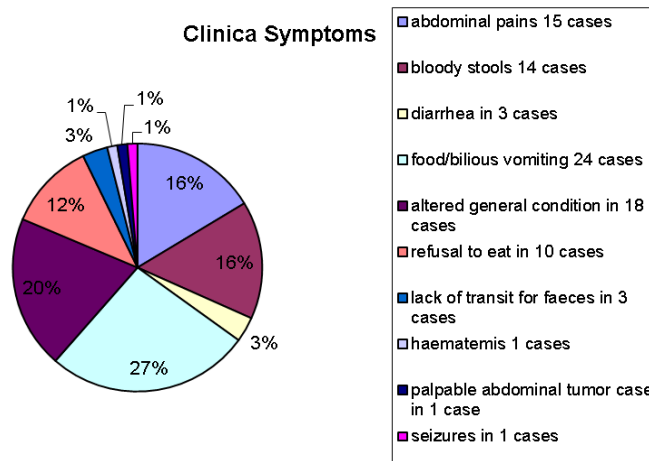


Fig.No.3 Clinical symptoms.

The onset was nonspecific through symptoms of gastrointestinal origin, predominantly vomiting and bowel disorders (stools with bloody streaks, diarrhea, and lack of transit or even normal transit). The difficulty of analysing a clinical history at this age, plus the difficulties caused by parents, whose misleading stories confuse the medical staff, cause that in about 50% of cases the initial clinical presentation to be misinterpreted as another disease, and, therefore, delay the diagnosis of intussusception. The most important event described by parents is “impaired general condition of the child” (1,2), sometimes associated with seizures, a situation interpreted as a digestive distress (acute nasopharyngitis, gastro-enteritis).

Patients are hospitalized in other services (pediatrics, infectious diseases) until symptoms such as bloody stools and abdominal bloating, occur; those are alarming symptoms, that require surgical examination.

The time interval, from the appearance of the first clinical symptoms and admission to our clinic ranged from

several hours to less than 4 days, most patients being admitted within 24-48 hours.

We notice the degree of subjectivity of the parents related to the description of symptoms and the range of occurrence. Patients have come to our surgery department directly (7 cases - 23.66%), in a state of emergency, sent from other medical services, where they were initially hospitalized and treated for other diseases (18 patients - 59.33%) and sent to our clinic on suspicion of intestinal intussusception or other surgical diseases (5-15%).

Addressability to our clinic was as follows: (Fig.No.4)

- direct 7 cases;
- 8 cases admitted to other clinics for: acute nasopharyngitis 8 cases and 10 cases of acute gastro-enteritis;
- 5 cases were sent to the clinic on suspicion of: intestinal intussusception 4 cases and acute abdomen 1 case.

Adressability to our unit

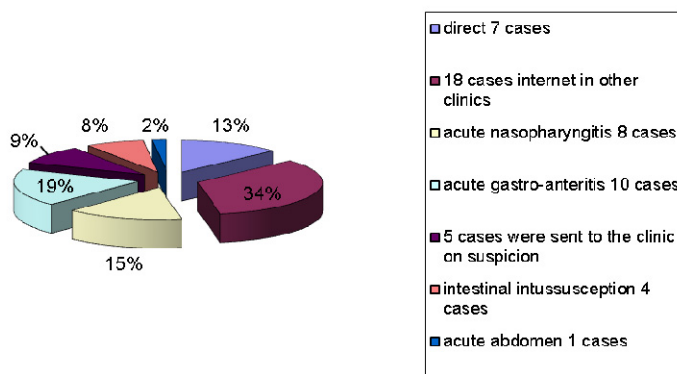


Fig.No.4 Adressability of patients.

We note that more than half of the cases were hospitalized for other conditions in various medical services (pediatrics, infectious). The question is whether these cases are diagnostic errors or the intestinal intussusception appeared secondary to other conditions that increase peristalsis (mechanism known to produce intestinal intussusception in infants - gastroenteritis, respiratory infections). To this, we add the fact that some patients were polio vaccinated (4 cases - 10%) and the intraoperative evidence of significant mesenteric lymphadenitis (4 cases - 10%)

Laboratory methods used for diagnostic were the ultrasound, empty abdominal radiography and enema with contrast substances (gastrografin). In the early presented cases, the “enema with contrast substances has both a diagnostic and a therapeutic role”.(7,8,9)

Abdominal ultrasound revealed a cockade image in 21 cases (69.66%), “peritoneal collection in Douglas and Morrison space”(9,10), in 1 case. In five cases, ultrasound

was not very revealing because of the abdominal distension, and in 8 cases, no ultrasound was performed. (Fig.No.5)

Abdominal radiography showed “hydroaeric levels” in 15 cases (9,10), (50%), abdominal opacity in 4 cases, 4 cases showed the normal picture, and in 7 cases it was not performed.(Fig.No.6)

Gastrografin enema was performed in 12 cases, all with early presentation up to 12-36 hours. Cases considered obsolete (over 36 hours), have not benefited from conservative treatment and because intestinal perforation might occur, it was decided to abandon this examination. All cases of enema with contrast substances revealed a stop of the contrast. In 8 of the cases disintussusception by enema occurred with contrast substances, and in 5 cases the procedure didn’t succeed. In the study group there were two dead patients, both in patients who were hospitalized after 48-72 hours from the onset and had loop necrosis, needing a right hemicolectomy. Both cases had postoperative complications, generalized peritonitis with anastomotic dehiscence, which required surgical reinterventions.

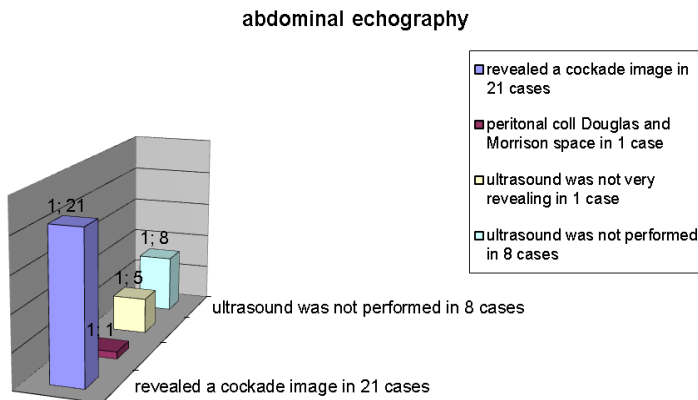


Fig.No.5 Abdominal ultrasound.

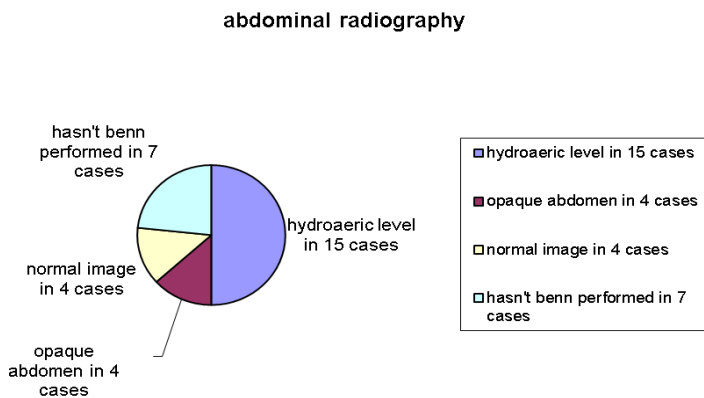


Fig.No.6 Abdominal radiography.

Other laboratory examinations to be taken into consideration in case of failure can be described:

Doppler examination should be performed in case of emergency and provides information regarding vascularization loops involved in intussusception and, thus, regarding the viability of loops handlers”(9,10).It can detect changes in the invaginated loop: “arterial stenosis until the disappearance of the arterial signal with increasing velocity at the site of vascular stenosis and poststenotic decreased speed and the corresponding change of the spectral appearance.”(9) “The vassel circulation in the loop is quite abundant; the veins seem dilated with low velocities compared to other loops.”(10)

Ultrasonography controls and views the therapeutic attempts successfully by “instillation of fluid under retrograded dosed pressure” (9). Also, there is a margin of error and intussusception cases where the tumor is not seen by ultrasounds: interposed loops, artifacts, echoes. For the ultrasound examination of abdominal loops the “ultrasound transducer “(10) is used according to the patient’s age and position of the explored segment. The digestive surface structures in ECSC-appendicular region are further examined with high-frequency linear transducer 5 to 7.5 MHz, allowing a detailed structural assessment. In the case

of children,” convex or linear transducers are used, with a frequency of 5 MHz.”(9)

The non-contrast abdominal radiography is non-specific as indicative value, and the aspect varies from a normal exam "opaque abdomen" to the classic picture of mechanical obstruction and possibly with hydroaeric levels and delayed pneumoperitoneum. After birth, swallowed air is distributed throughout the intestinal tract, physiological aeroentery, but, starting with the food diversification after the age of 3 months and a half, gas distribution starts to resemble that of adults. “Aeroentery and marked distention of the colon”(8) are the signs detected in the first hours. On a background of gaseous distension or independently of this, there is the accumulation of fluid in loops creating hydroaeric images. Their appearance varies by location: the "organ pipe image (large longitudinal diameter, centrally located, disposed on levels) for the enteral ones, or large with peripheral location, the colic ones. Intestinal perforation is illustrated by the presence of pneumoperitoneum, semilunar image with diaphragmatic domes standing under or between the side of the liver and abdominal wall for the patient with the left lateral decubitus patient or in the anterior abdominal wall for the patient in supine horizontal radius. “It is recommended to avoid administration of barium sulphate per bone; the examination

was possible only with Gastrografin or Gastromiro non-ionic water-soluble contrast agents.”(8)

Because *CT* is especially radiant to young children, it remains a solution when the other methods have been irrelevant, “bringing additional information on associated pathology, may specify the place, and the related extrinsic or intrinsic pathology”(9): adhesions, strangulation, intraperitoneal hernias, extrinsic masses, benign and malignant tumors, Crohn disease, tuberculosis, radiation enteritis or colitis, intramural hemorrhage, intussusception, malrotations.

Conclusions

1. Early diagnosis of intestinal intussusception is made by associating the clinical history with the clinical examination and the laboratory examination.

2. Intestinal intussusception appears when the patient is healthy with violent abdominal pain accompanied by

restlessness, interrupted by periods of calm of variable duration.

3. Correct diagnosis based on abdominal examination, rectal examination, ultrasound and barium enema should be established before the onset of gastrointestinal bleeding.

4. Clinical examinations in the early diagnosis of intestinal intussusception include:

- Intermittent abdominal crisis associated with vomiting and with the presence of intussusception tumor = intestinal intussusception.

- Abdominal pain and intermittent crises, finding blood on rectal examination = intestinal intussusception.

5. In infants, the underdeveloped subcortical brain area produces disorder of the excitation and inhibition processes, favoring the excitation, and lack of inhibition and difusability of excitation influences subcortical centers producing important circulatory and respiratory disorders, trophic state of shock that damage the child’s condition.

References

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