Postoperative Intussusception in Children

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Abstract. Postoperative intussusception (POI) is an uncommon cause of postoperative mechanical bowel obstruction in children. Four cases of POI during a period of 15 years (1987-2001) were analysed retrospectively. Symptoms developed after a median period of 2.5 days following the operation. All cases were successfully treated with operative manual reduction. POI occurs after a wide variety of surgical procedures and is often difficult to diagnose because the symptoms are often obscure. As a conclusion, we state that reaching a diagnose requires a high index of suspicion.

Introduction

Intussusception is the telescoping of one portion of the intestine into another. Although primary or secondary intussusceptions are well-known causes of intestinal obstruction in children, POI occurs only about once per 200 to 1000 pediatric laparotomies, and is the cause of 12% of cases of postoperative mechanical bowel obstructions (1,2,3,4,5). Due to this low incidence, the possibility of POI in the pediatric patient is often either forgotten or overlooked (6). A retrospective analysis was performed in 4 patients with POI who were seen during a 15 year period in our pediatric surgical clinic. The epidemiology, presenting symptoms and diagnostic strategy are outlined.

Materials and Methods

Records of children with POI between years 1987-2001 were evaluated with regard to age, sex, previous original operations, type of intussusception, symptoms, mode of diagnosis, treatment.

Results

Between 1987 and 2001, 1341 abdominal operations were performed, leading to a POI rate of 0.29%. The patient group consisted of 3 boys and 1 girl with a median age of 23 (range 9-42) months. A variety of initial abdominal operations had been performed (Table 1). Symptoms of postoperative intestinal obstruction developed after a median of 2.5 (range 2-3) days. The presenting symptoms are shown in Table 2 with abdominal distension being the leading symptom. In each patient, the plain abdominal X-ray film revealed intestinal air-fluid levels with distended loops, suggestive of mechanical intestinal obstruction. Abdominal ultrasonography performed in every patient confirmed POI in three of them.

Indications for repeat laparotomy was intussusception in 3 patients and signs of peritonitis in one patient. In each patient one intussusception site was found. The localization site of intussusception was distal jejunum in one and ileum in three patients (Table 1). All cases were successfully treated with intraoperative manual reduction and no complications occurred.

Table 1

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age (years)</th>
<th>Initial diagnosis</th>
<th>Type of intussusception</th>
<th>Interval (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.5</td>
<td>Lower ureteral stone</td>
<td>Ileocolic</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Neuroblastoma</td>
<td>Ileocolic</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>13/12</td>
<td>Hirschsprung's disease</td>
<td>Jejunoojejunal</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>14/12</td>
<td>Wilms tumour</td>
<td>Ileocolic</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Presenting symptom</th>
<th>No. of patients (n = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distended abdomen</td>
<td>3</td>
</tr>
<tr>
<td>Persisting nasogastric tube produc</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal cramps</td>
<td>2</td>
</tr>
<tr>
<td>Fever</td>
<td>1</td>
</tr>
<tr>
<td>Abdominal tenderness</td>
<td>1</td>
</tr>
<tr>
<td>Strawberry stools</td>
<td>1</td>
</tr>
</tbody>
</table>

*Some patients had more than one symptom.
Discussion

POI is a possible complication of abdominal surgery in both children and adults. POI differs from classical idiopathic intussusception in that it usually occurs in children older than one year, and it is almost always found in the small bowel (1,4). The intussusceptions are single and located in the small bowel in 85% of cases, but multiple sites are also affected in about 5% (1,2). These data are consistent with the present results. Both sexes are equally affected reportedly, although in the present series most of the patients were male (7). Postoperative obstructions are most commonly due to intestinal adhesions (78%), small bowel intussusception may be responsible for as many as 5-10% of postoperative obstructions (78%). In our series, three patients had retroperitoneal dissections (SWENSON’S pull-through for Hirschsprung’s disease).

The etiology of POI is obscure. There is evidence that the operative procedure leads to an edematous reaction with subsequent perfusion deficits and motility disturbances of the intestine (3,9,10). Many reports emphasize the relationship between intussusception and lengthy operations with extensive handling of intestines. Retroperitoneal dissection is also reported to be related to POI (3,6). In the present series, 3 out of 4 patients had retroperitoneal dissections in the initial operations, similar to the previous reports. Irregular peristalsis of the intestine after an abdominal operation often promotes one or more incipient invaginations of the bowel, and these may progress to true intussusception. Desiccation of exposed portions of the bowel, adhesions or edema due to manipulation at operation may also act as leading points. Occasionally a suture line is found to be the lead point (1,3,13). Another trigger mechanism may be the neurotoxic effect of chemotherapy and radiation therapy (11). The role played by neuro-endocrinologic factors is still unknown. It is obvious, however, that surgery for neuroblastoma, Hirschsprung’s disease and gastroesophageal reflux is associated with higher incidence of POI (6,8,12).

The reported incidence of POI varies from 0.01 to 0.25 percent of all laparotomies (6,8). In this study, the incidence was 0.29 percent of all laparotomies. Usually it is reported to occur after a symptom-free postoperative interval of less than a week. At five to seven days postoperatively, patients may experience cramping abdominal pain, sudden appearance of slight abdominal distention, bilious vomiting and prolonged nasogastric tube drainage. Because nasogastric drainage is usually a part of postoperative periods of children with abdominal operations, a progressive increase in its amount and a change of quality into a bilious form should raise the suspicion of a mechanical intestinal obstruction. The symptoms start in 64 percent within 1 week and in 90 percent within 2 weeks (1,6,7). A palpable mass and rectal bleeding, as in ileocolic intussusceptions, are relatively rare (1,6,7). These data are consistent with the findings of this study which revealed that only one patient had the classical so called “strawberry jelly” rectal bleeding and no patient had a palpable abdominal mass.

The diagnosis of POI may be suspected clinically. In case of suspicion of POI, plain abdominal radiograph and ultrasonography of the abdomen are indicated. In the differential diagnosis, abscesses may be visualized sonographically and adhesive bowel obstruction or volvulus can often be diagnosed on the plain films. Ultrasonography, furthermore, has been reported to document the presence of an intussusception with high sensitivity of 80%. However, it must be bore in mind that a negative ultrasonographic report does not rule out intussusception (13). In the present series, three of the four POIs were detected by ultrasonography. Most of POI can be reduced without resections, and there is a very low incidence of recurrence (1,7).

Postoperative intussusception is an uncommon, but important cause of postoperative intestinal obstruction. This condition must be suspected in every child who shows symptoms of postoperative intestinal obstruction occurring within a week following an abdominal (and more especially retroperitoneal) operation. Since the typical features of intussusception are usually absent and radiology frequently unhelpful (except for ultrasound), a high index of clinical suspicion is necessary for early diagnosis and treatment, in order to avoid intestinal necrosis.

References


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