GASTRIC PERFORATION PRESENTING AS BILATERAL SCROTAL PNEUMATOCELES*

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SUMMARY: Aslan Y, Sarıhan H, Dinç H, Gedik Y, Aksoy A, Dereci S. (Departments of Pediatrics, Pediatric Surgery and Radiology, Karadeniz Technical University Faculty of Medicine, Trabzon, Turkey). Gastric perforation presenting as bilateral scrotal pneumatoceles. Turk J Pediatr 1999; 41: 267-271.

Although processus vaginalis is patent in the majority of newborn infants, the expression of an intraabdominal pathology such as gastrointestinal perforation or bleeding in the scrotum is very rare. In a large percentage of neonates with the gastrointestinal perforation, pneumoperitoneum is absent. In any case, it may not be detected in early radiographs. We report a newborn baby who presented with bilateral scrotal pneumatoceles as a first sign of pneumoperitoneum due to gastric perforation. Plain x-ray of the abdomen was normal except for pneumoscrotum, but contrast study revealed gastric perforation. *Key words: gastric perforation, scrotal pneumatocele.*

Abdominal distention is a universal finding of gastrointestinal perforation. The presence of a blue discoloration of the abdominal wall and/or of disappearing bowel gas on abdominal x-ray should strongly suggest bowel perforation[1]. Most full-term newborns have an open processus vaginalis[2]. Therefore, one would expect an intraabdominal pathology to be expressed frequently in the scrotum. However, presentation of gastrointestinal perforation with a scrotal pneumatocele has been reported in only a few cases[3-6]. Here, we report a newborn baby with gastric perforation who presented with bilateral scrotal pneumatoceles.

Case Report

A 3,050 g boy was born vaginally at 42 weeks' gestation to a 30-year-old, healthy multigravida. Apgar scores three and six after one and five minutes, respectively. Umbilical cord blood gases revealed pH 6.09, PO_2 32 mmHg, and PCO_2 56 mmHg. Biochemical analyses yielded urea nitrogen 38 mg/dl, creatinine 1.2 mg/dl, aspartate aminotransferase 102 U/L, aminotransferase 94 U/L, creatinine kinase 1670 U/L, lactate dehydrogenase 2310 U/L, and electrolytes,

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calcium, phosphorus and uric acid levels within normal limits. Cranial ultrasound demonstrated a grade-II intracranial hemorrhage. Chest and abdominal roentgenograms were normal.

The infant was intubated for respiratory insufficiency due to hypoxic ischemic encephalopathy and intracranial hemorrhage. He was treated with synchronized intermittent positive pressure and subsequent intermittent mandatory ventilations. Dopamine, dexamethasone, mannitol and intravenous fluid were administered.

At the 34th hour, a sudden swelling of bilateral scrotums was noted. The swelling was translucent and compressible but could not be emptied into the abdomen, suggesting intrascrotal trapping of air (Fig. 1). Ten minutes later, the baby developed abdominal distention. Plain abdominal x-ray was normal except for bilateral scrotal pneumatoceles. Radiological contrast study of the upper gastrointestinal tract using iopamidol was performed. There was a prominent extravasation from the stomach immediately after the ingestion of the contrast agent and bilateral scrotal pneumatoceles (Fig. 2). neither peritoneal and gastric fluids nor blood and urine cultures grew any microorganism. Prothrombin time, thromboplastin time and platelet count were within normal limits.

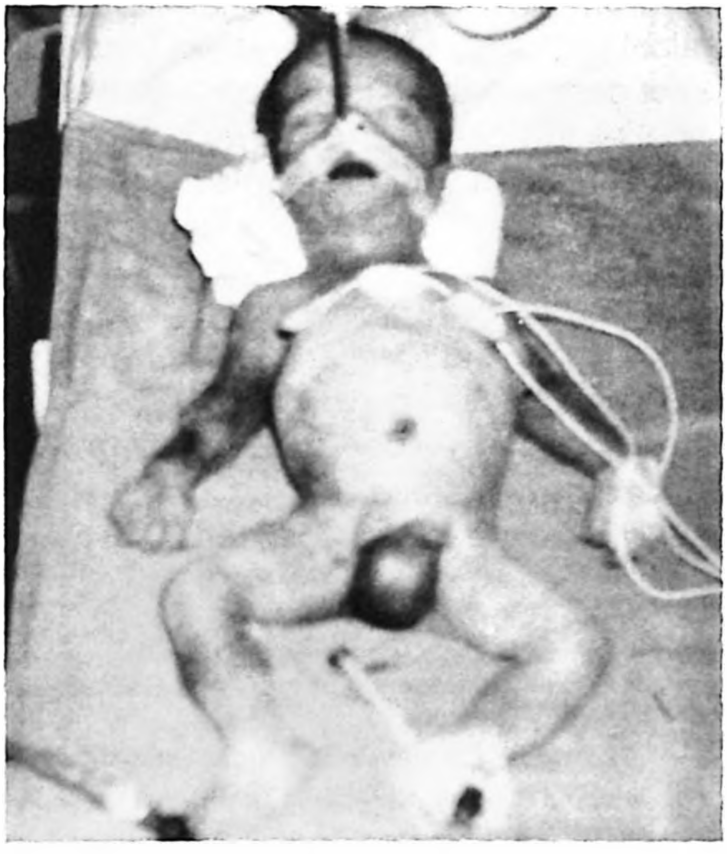

Fig. 1: The case, who developed sudden, translucent swelling of bilateral scrotums, suggesting intrascrotal trapping of air.

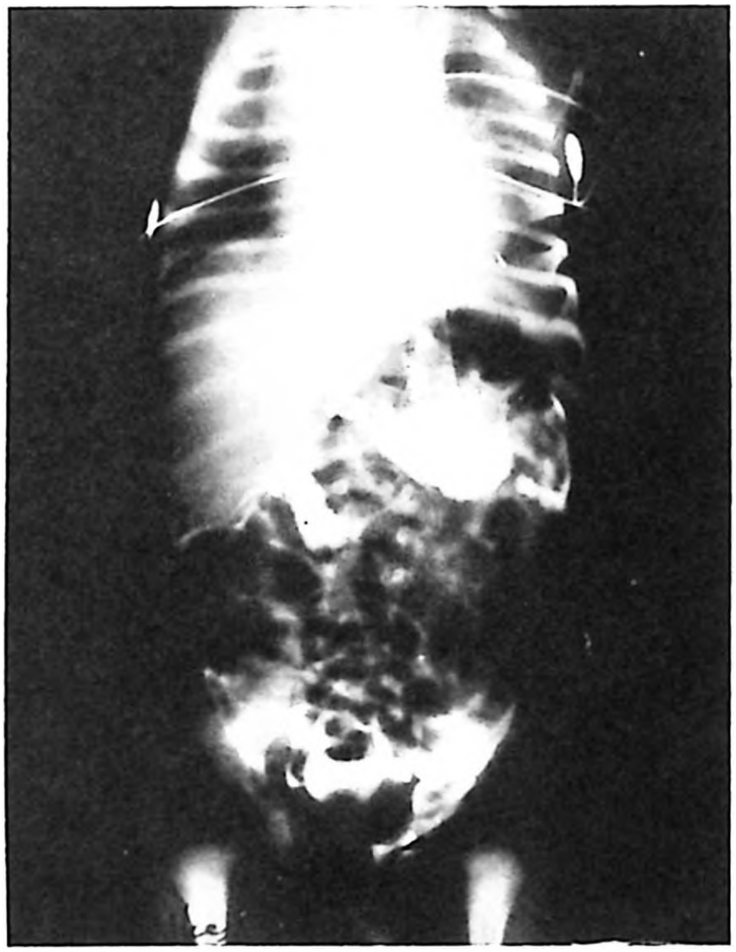

Fig. 2: Radiological contrast study of the upper gastrointestinal tract using iopamidol shows a prominent extravasation from the stomach immediately after the ingestion of the contrast agent and air shadows in bilateral inguinoscrotal regions (arrows).

A nasogastric tube was inserted. Bilateral scrotums were punctured and free air was removed by suction. Surgical intervention was performed in the neonatal intensive care unit. Stomach perforation was detected, and primary repair and drainage were performed. Intravenous antibiotics (ceftriaxone, netilmicin sulfate and metronidazole) were given. At the 46th hour, he developed bradycardia and died due to intracranial hemorrhage.

Discussion

Among the upper gastrointestinal tract perforations in infants and children, gastric perforations are predominant[7]. However, perforation of the stomach is rare during the newborn period and the first year of life. A wide spectrum of causes has to be considered[8]. Hypoxia is believed to be the most important datum in the pathogenesis of gastric perforation in childhood[9]. The present case had severe hypoxia.

The most common clinical presentation of gastrointestinal perforation is abdominal distention[1, 10]. Abdominal distention is frequently abrupt and rapidly progressive[11]. In our case, abdominal distention was not the first sign of the gastrointestinal

perforatilon. In a few cases reported previously, gastrointestinal perforation presented with scrotal signs such as pneumatocele or hydrocele, which require a patent processus vaginalis. Patency mainly depends on postnatal age. Eighty to 90 percent of full-term newborn infants have an open processus vaginalis[2]. Although the processus vaginalis is patent in the majority of newborn infants, expression of an intraabdominal pathology such as perforation, inflammation or bleeding in the scrotum is relatively rare. To our knowledge, scrotal pneumatocele reflecting the presence of pneumoperitoneum has been reported in only four cases prior to this one[3-6]. Pneumoperitoneum was the result of pulmonary barotrauma in one, abdominal surgery in two, and spontaneous gastrointestinal perforation in one. Hydrocele due to accumulation of blood and/or intestinal material and scrotal inflammation as a result of gastrointestinal perforation and/or meconium peritonitis have only been described in case reports[12, 13].

Pneumoperitoneum signals gastrointestinal perforation and, as a rule, requires a prompt laparatomy[14]. However, it is reported that patients with respiratory distress or patients ventilated artificially may develop pneumoperitoneum without any gastrointestinal leak[5, 14]. Critically ill infants with respiratory distress or hypoxia may not easily tolerate an unnecessary laparatomy; therefore, "medical" pneumoperitoneum should be distinguished from "surgical" pneumoperitoneum by clinical and radiographic findings[14]. However, early radiographs may not reveal pneumoperitoneum, which becomes obvious with time[11]. In addition, it is reported that in a large percentage of neonates with gastrointestinal perforation, pneumoperitoneum is absent[10]. Therefore, if the diagnosis is doubtful, radiological contrast study of the gastrointestinal tract using a water-soluble contrast agent has been advocated[15].

In our case, the presenting sign of the gastrointestinal perforation was bilateral scrotal pneumatoceles; abdominal distention developed later. Plain x-ray of the abdomen did not show pneumoperitoneum or an intraperitoneal air-fluid level suggesting gastrointestinal perforation, but it did demonstrate bilateral penumoscrotum. Radiological contrast examination of the gastrointestinal tract indicated gastric perforation in addition to pneumoscrotum.

In conclusion, we believe that awareness of scrotal pneumatoceles will enable early diagnosis of gastrointestinal perforation. Waiting for the typical clinical findings of gastrointestinal perforation such as abdominal distention or blue discoloration of the abdominal wall is likely to lead to a hazardous delay in diagnosis and treatment.

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