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A Case of Abdominal Wall Herniation with Ceacel Perforation in a Child Post Bicycle Handlebar Injury

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Introduction

Children are prone to trauma which causes more than 1.5 million injuries with 500,000 hospital admissions per year[5]. Bicycle accidents are a frequent cause of injury, and the handlebar injury holds one of the frequent blunt traumatic abdominal injuries in children[2,3,4]. Risks are higher compare to adults as children engage in riskier behaviour. Here, we report a case of an unusual bicycle handlebar injury.

Case Description

An 11-year-old boy was riding his bicycle with his friend when they both collided and unable to hit the brakes on time. He was thrown forward on impact, and his right lower abdomen hit the handlebar of the bicycle then fell face down on the road. He sustained pain over the right iliac fossa region and right foot. Otherwise, he was alert, and there was no other complaint.

Upon arrival to the Emergency Department (ED), GCS was full. He was able to maintain saturation on room air. He was tachycardic, but his blood pressure was still normal. Physical examination revealed a soft and non distended abdomen with tenderness over right iliac fossa and crepitations on the abdominal wall. No bruises or wound was seen over the abdomen.

Investigations, diagnosis and treatment

There was no apparent free air seen in the chest and abdominal X-ray. FAST scan in ETD noted to have free fluid at the Morrison's pouch. We proceeded with ultrasound and CECT abdomen which reported as traumatic abdominal wall hernia with small defect containing the omentum and pneumoperitoneum, suspicious of bowel perforation.

He was resuscitated with intravenous fluids and adequate analgesia. We started him with antibiotics and proceeded with laparotomy, limited right hemicolectomy with primary anastomosis, and repair of the anterior abdominal wall defect. The peritoneal cavity was contaminated with hard feces but no hemoperitoneum. There was a perforation over the caecum measuring 1.5 x 1.5 cm and patches of hematoma over the small bowel and the omentum. There was also a defect over the anterior abdominal wall lateral to the rectus abdominis involving the entire layers of transversus abdominis, internal oblique and external oblique with unhealthy subcutaneous fat overlying area of defect.

Figure 1 : No bruising seen over the abdomen

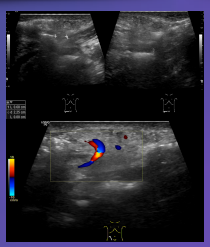

Figure 2 : Ultrasound abdomen showed a approximately 0.7 cm defect in the anterior abdominal wall over the right iliac fossa

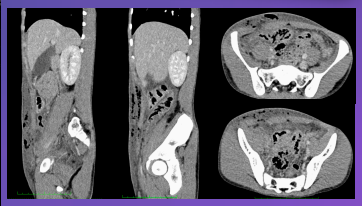

Figure 3 : CT abdomen showing 1.5x0.6 cm abdominal wall defect with intraabdominal content and vessels herniation, likely omentum and colonic perforation by presence of pneumoperitoneum.

Outcomes

He developed wound breakdown on post operation day 3, and wound dressing was done daily. He was discharged from the hospital once his wound was able to be managed as an outpatient. Upon following him up in the clinic, his wound healed completely after effective wound care and dressing.

Discussion

Bicycle riding is an everyday sport activity for children. However, they do not have any rules and safety regulations, leading to a higher incidence of accidents and injuries, which is usually associated with abdominal injury. It was reported that the highest injuries were solid organs injuries[4] with only 9-10% who had intestinal perforation, commonly in the duodenum. Although there is a low velocity of impact, the small sectional area of the handlebar would still cause intrabdominal injuries despite infrequent findings of external bruising[2].

In this case, there is a traumatic abdominal wall hernia(TAWH) with bowel perforation. TAWH holds approximately 1% of blunt abdominal trauma. The impact between the handlebar and the abdominal wall may cause a rupture of the fascia without skin lesions. It is due to the thinner abdominal wall and less developed abdominal musculature in children[3]. Associated internal injury has been reported between 25-70%[1].

As this type of trauma may come with severe injuries, every child who comes in with handlebar injury should be managed with high index suspicion. The nature of the injuries would also show signs and symptoms that may not develop until several hours after trauma.

In intestinal injuries, some studies suggest that a delay as short as 8 hours can increase septic complication[3]. Child that developed tachycardia, fever, persistent or increased abdominal pain may indicate concealed small bowel injury. Thus, close observation and assessment at least 24 hours[4] are vital, and emergency laparotomy is needed if indicated. Most reports recommend immediate repair of the abdominal wall hernia to avoid complications[1].

CT scan is the modality of choice in the evaluation of abdominal injury after high energy trauma in a stable child[3,4,6]. In children with low energy trauma, ultrasound can be an alternative modality[6].

Conclusion

Traumatic abdominal wall herniation with the association of intrabdominal injury is rare. Thus a high index of suspicion is needed for prompt management. A radiological investigation will help in confirming the diagnosis, and CT abdomen is the gold standard in assessing any associated injury. Earlier management will help in preventing morbidity and mortality.

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