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Colonic (splenic flexure) necrosis due to thrombosis of the middle colic artery following blunt abdominal trauma.

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We report an unusual case of a 28-year-old man who developed a colonic necrosis due to thrombosis of the middle colic artery 18 hours following blunt abdominal trauma. Although rare, this condition can occur in those patients whom non surgical treatment was initially performed.

UNITERMS: Abdominal trauma, colonic necrosis, shock, hemorrhage, arterial thrombosis, intestinal ischemia.

Large bowel necrosis following abdominal trauma in young patients is an unusual condition. Few cases have been described, most of them due to bipovolemia or hemorrhagic shock (1,3,6).

The following case report of a young trauma patient without hemodynamic instability who developed a colonic necrosis in the splenic flexure is presented because of its rarity.

CASE REPORT

Thoracoabdominal transition posteriorly on the left side. He also had clinical signs of a fracture on his left tibia. When initially seen in the ED, his systolic blood pressure was 130 mmHg and remained stable after 1000 ml bolus of crystalloid. GCS=15, pulse was 88/minute and respiratory rate was 24/minute. Physical examination

revealed an hematoma previously described and diminished breath sounds in the left side of the thorax. Abdominal examination revealed tenderness to deep palpation in the upper left quadrant without signs of peritonitis. Rectal examination was normal.

Laboratory results were hematocrit of 38% and an amylase level of 240 (normal range: 140-390 U/l). Roentgenograms of the cervical spine and pelvis were normal. Thoracic X-ray revealed a posterior fracture of the 8th left rib and a small volume hemothorax. Roentgenograms of the lower left limb revealed a fractured tibia.

Head CT scan was within normal limits and the abdominal CT scan revealed a small amount of free fluid in the upper left quadrant and a suspected grade I splenic injury. Because of the absence of peritonitis and the hemodynamic stability he was elected to be clinically observed.

Eighteen hours after admission the patient complained of abdominal pain. Abdominal examination revealed evident signs of peritonitis. Pulse rate was 100/minute, temperature was 38°C, systolic blood pressure was 120 mmHg and leukocyte count was 18,000/mm³. The patient underwent a tube thoracostomy (400 ml of blood)

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and an exploratory laparotomy which revealed a 3-cm tear in the second portion of the duodenum, a 2-cm and a 4-cm tear in the posterior gastric wall and in the transverse colon, respectively, all of them without perforation of the mucosa, 400 ml of free blood in the peritoneal cavity, a longitudinal tear of 10 cm in the mesentery and a large right side retroperitoneal hematoma. It was also found a necrotic colon in the splenic flexure without perforation, and there was no splenic injury.

During colonic resection, a thrombosis of the middle colic artery was identified since there was absence of pulsation and this thrombus was removed from the artery. The right portion of the transverse colon, although normal on its external surface, had a necrotic mucosa. Large bowel resection was extended from the hepatic flexure to the distal portion of the descending colon. An Hartman's procedure was performed and the distal colon was drained. The final pathology examination revealed an ischemic necrosis of the colon and viable proximal and distal margins. The patient had an uneventful outcome.

DISCUSSION

Bowel necrosis is frequently due to mechanical obstruction of the mesenteric vessels. As described by Wilson and Qualheim, in 1954, non occlusive situations associated with cardiac diseases, atherosclerosis and poor cardiac output can predispose to bowel infarction (7). Either in young patients or in the experimental field, hemorrhagic shock has been considered an important mechanism of bowel ischemia.

Most of the published data report cases which ischemia or necrosis occurred in the right colon, although it can be extended from the proximal jejunum to the distal colon. Extensive lacerations in the mesentery can also cause bowel necrosis (1,3,6,4).

The development of colonic necrosis in a young patient 18 hours after blunt abdominal trauma without hemodynamic instability is quite rare. Intraoperative findings of necrosis in the splenic flexure of the colon associated with thrombosis in the middle colic artery could be explained by a possible anatomic abnormality in the irrigation of that part of the colon. This idea is supported by the fact that many anatomic variations regarding origin

and presence of the middle colic artery have been described. This artery can be double in 2%, it can be absent in 3%, arises as a separate branch from the superior mesenteric artery in 4% and derives from a common right colic - middle colic trunk in 53%. It also may arise from other branches of the superior mesenteric artery or celiac trunk (5). The splenic flexure of the colon is considered a weak point in the large bowel circulation due to the non-existence of anastomosing arcades close to the gut wall linking the ascending branch of the left colic artery with the left branch of the middle colic artery (5). This weak point has been known as Griffiths' point (2).

With these two pieces of anatomic information and the operative findings, all together, one can suppose that necrosis developed due to a deceleration mechanism that caused thrombosis of the middle colic artery. As the arterial obstruction was an acute event, there was not available time to the collateral vessels compensate circulation to the Griffiths' point. Fortunately it is an uncommon situation. Trauma surgeons must be aware of the potential for development of large bowel ischemia or necrosis after blunt abdominal trauma specially in those patients maintained on clinical observation for small lacerations in solid organs.

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RESUMO

Os autores relatam caso raro de um doente do sexo masculino de 28 anos de idade, politraumatizado que desenvolveu necrose da flexura esplênica do cólon devido a trombose da artéria cólica média após 18 horas do traumatismo. Embora rara, esta situação pode ocorrer naqueles doentes inicialmente submetidos a tratamento não operatório após trauma abdominal fechado.

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