G67 Mechanisms of Delayed Splenic Rupture: A New Hypothesis

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After attending this presentation, attendees will understand a new hypothesis which describes a potential mechanism of delayed splenic rupture.

This presentation will impact the forensic community by introducing a new mechanism of delayed splenic rupture. Also it impacts the medical and surgical communities as it guides to reduce the high mortality rate in delayed splenic rupture.

A 46-year-old man was assaulted with a club to the face and chest and sustained multiple contusions. On admission there were no signs of circulatory shock. The abdominal examination was unremarkable. During his stay in hospital he had light diets due to pain and loss of appetite. He was managed symptomatically and discharged five days after the incident.

Two hours after discharge he was admitted again with a complain of severe abdominal pain. He claimed that soon after his return to home, he ate two full plates of rice and curry, three mangos, and drank two glasses of water as he was so hunger and developed appetite for home made food. Immediately after the diet he experienced this abdominal pain.

On admission, he was pale with a pulse rate of 116 beats per minute and a blood pressure of 60/30 mmHg. There was a marked tenderness with rigidity and guarding on abdominal palpation. Bowel sounds were attenuated. Hemoglobin level had dropped to 7.2 g/ dl from a level of 10.5 g/dl within five hours. Two pints of blood were transfused. Although it was planned to do an ultrasound scan of abdomen the patient was pronounced dead thirteen hours after admission.

Autopsy revealed a generalized pallor. The abdomen was distended. A contusion of 8x3.5 cm was seen on left lower chest laterally. There were no rib fractures. A hemoperitoneum of 2300 ml was noted. The spleen was within the normal range. A hematoma of 2.5x3x1.5 cm was seen overlying a splenic laceration on the gastric area of the visceral surface. The laceration was 1.25 cm in length with a depth of 0.25 cm, involving splenic capsule and parenchyma. The body of the empty stomach was in contact with this hematoma. Histological examination confirmed the perisplenic haematoma of otherwise normal spleen.

The mechanism of this serious and possible life threatening complication is still not fully understood. There are a number of potential mechanisms for delayed splenic rupture.

Intrasplenic hematomas, pseudoaneurysms of intraparenchymal splenic artery branches, and asymptomatic splenic pseudocysts all of which develop following abdominal trauma and rupture, possibly days, months or years later are three mechanisms suggested in this context. Also bleeding from a splenic rupture could be tamponaded by surrounding organs and /or perisplenic haematoma formed at the time of injury, delaying its rupture at a later date.

The visceral surface of the spleen consists of gastric, colic and renal surfaces. The gastric surface is directly in contact with the body of the stomach. Therefore a perisplenic hematoma which plugs the splenic laceration on the gastric surface temporarily, may easily be dislodged by the mechanical forces exerted by distending stomach, causing fatal intraperitoneal hemorrrhage. Such risk is imminent during the early period of regeneration of splenic laceration where wound breaking strength is relatively low.

In this case, the laceration occurred at the time of assault was plugged temporarily by the hematoma. On day five, pressure exerted by full stomach after the heavy solid meal, dislodged the hematoma causing hemorrhage from the site of laceration.

The pressure exerted by full stomach after heavy solid meals may disturb perisplenic hematoma overlying a laceration on the gastric surface of the spleen causing delayed splenic rupture leading to sudden fatal intraperitoneal hemorrhage.

It is advisable to maintain a light liquid/ semisolid diet instead of a heavy solid meal during the period of recovery of the patients who are having perisplenic haematomas due to lacerations on the gastric surface of the site of laceration.

Delayed Rupture, Spleen, Mechanisms

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