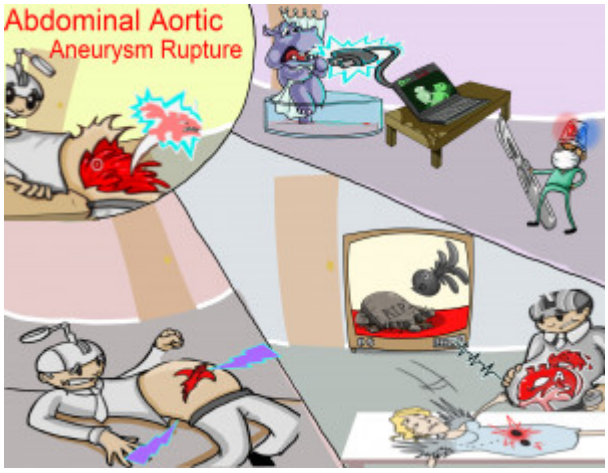
Abdominal Aortic Aneurysm Rupture

Abdominal aortic aneurysm (AAA) is a focal dilatation of all three layers of the abdominal aortic wall (tunica intima, media, and adventitia). One of the most feared complications of AAA is rupture, which is life-threatening. Clinical features of AAA rupture include acute tearing abdominal pain that may radiate to the back, a pulsatile abdominal mass, Grey Turner and Cullen signs, as well as hypovolemic shock. The diagnosis is clinical because these patients are often severely symptomatic and hemodynamically unstable, requiring emergent intervention. Stable patients may undergo ultrasound or CT angiography. Management is emergent surgical intervention. Unfortunately, AAA rupture portends a poor prognosis with an extremely high mortality rate.



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Clinical Features

Acute Tearing Pain

Tearing Pain-bolt

AAA rupture presents with acute, severe, tearing back or abdominal pain that can radiate to the flank, buttocks, legs, or groin depending on whether the rupture is intraperitoneal or retroperitoneal. Nausea and vomiting secondary to peritoneal irritation and severe blood loss and hypotension can be present.

Pulsatile Abdominal Mass

Pulsating Abdomen

A painful pulsatile abdominal mass that is synchronic with heart rate is highly suspicious for AAA. Abdominal pulsation may be most significant slightly to the left of midline.

Grey Turner Sign

Grey Turnip

Grey Turner sign represents flank ecchymosis secondary to blood dissecting between fascial planes in the retroperitoneum. The bruising appears as a blue or purple discoloration in the flanks, and is a sign of retroperitoneal bleeding. It is classically seen in patients with pancreatitis, but is also often apparent in AAA rupture.

Cullen Sign

(:) Colon Symbol

Cullen sign is characterized by periumbilical ecchymosis. This occurs due to retroperitoneal blood extending through the falciform ligament and into the periumbilical subcutaneous tissue. This can be seen in abdominal aneurysm ruptures.

Hypovolemic Shock

Hippo-volume-cup Shock

Extensive blood loss due to free AAA rupture into the peritoneal cavity can result in hypovolemic shock secondary to the hemorrhage. In some cases a hematoma can form following rupture sealing the retroperitoneum, leading to a contained rupture which can be less symptomatic. Hypovolemic shock due to extensive blood loss produces hypovolemia and cerebral hypoperfusion leading to altered mental status.

Diagnosis

Diagnosis by Clinical Impression

Diagnostic-computer displaying Clinical Impression

Ruptured AAA is a clinical diagnosis. Only consider imaging in hemodynamically stable patients if the diagnosis is uncertain. Ultrasound or CT angiography may be helpful in these cases. Otherwise, most patients with present with anemia and metabolic acidosis on stat labs.

Treatment

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Emergent Surgical Intervention

Emergency Surgeon

Emergency surgical repair within 90 minutes is indicated in unstable patients. Endovascular aneurysm repair (EVAR) is recommended over open surgical repair (OSR) if anatomically feasible.

Considerations

Poor Prognosis

Gravestone

The prognosis for patients who present with rupture of AAA is extremely poor. Mortality rates are above 80%. Prevention and screening with ultrasound are paramount in this disease.

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