

THE CLINICAL PICTURE

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The Clinical Picture

A 60-year-old man with abdominal bruising



FIGURE 1. Cullen sign.

A 60-YEAR-OLD MAN with hepatocellular carcinoma was admitted to the hospital with pulmonary emboli secondary to inferior vena caval thrombosis that extended to the right atrium.

He became hypotensive on the second day, with a heart rate of 124 per minute, respiratory rate 44 per minute, pulse oxygen saturation 79% on room air, and systolic blood pressure 70 mm Hg. Physical examination revealed abdominal ecchymoses resembling the Cullen sign and flank ecchymoses resembling the Grey Turner sign (**FIGURES 1 AND 2**).

He was given a bolus of normal saline followed by infusion of fresh frozen plasma and packed red blood cells. His lactate level was 17.52 mg/dL (reference range 0.1–2.2). His hemoglobin and hematocrit decreased precipitously—the hemoglobin from 10.5 g/dL to 5.9 (reference range 14.0–17.5), and the hematocrit



FIGURE 2. Grey Turner sign.

from 30.3% to 17.8% (reference range 41–50). He was transferred to the intensive care unit. A do-not-resuscitate order was instituted, and he died 12 hours later.

■ CONDITIONS RESULTING IN THE CULLEN AND GREY TURNER SIGNS

The Cullen sign, a bluish discoloration of the periumbilical skin, was originally described in 1918 by the gynecologist Thomas Cullen, MD, in a patient with a ruptured ectopic pregnancy.¹ The Grey Turner sign, an ecchymotic discoloration of the lateral abdominal wall or flank, was first reported in 1920 by a surgeon, Dr. George Grey Turner, in a patient with acute pancreatitis.²

Dr. Mace has disclosed working as an independent research contractor for Baxter, Luitpold Pharmaceuticals, Gebauer, and Halozyme Therapeutics, and teaching and speaking for Gebauer and Halozyme Therapeutics.

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The signs occur in about 1% of patients with acute pancreatitis and predict a poor prognosis, with a reported death rate of 37%.³

The appearance of ecchymoses in the periumbilical area or flank has been taught as a hallmark of acute pancreatitis.⁴ However, the original patient described with the Cullen sign did not have pancreatitis,^{4,5} and it has been reported with many other conditions, including ruptured aortic aneurysm, splenic rupture, and rectus sheath hematoma, as a complication of anticoagulation or perforated duodenal ulcer, and, as in our patient, as a manifestation of liver disease.

How they occur

The common pathway leading to the occurrence of these subcutaneous ecchymoses is retroperitoneal bleeding followed by tracking of

blood from the retroperitoneum through a defect in the transversalis fascia to the abdominal wall musculature and then to the periumbilical subcutaneous tissue. In the Cullen sign, blood diffuses from the retroperitoneum along the gastrohepatic and falciform ligaments to the umbilicus. In the Grey Turner sign, blood diffuses from the posterior pararenal space to the lateral edge of the quadratus lumborum muscle.^{6–8} Blood from a retroperitoneal hemorrhage may also diffuse and pool at the inguinal ligament (Fox sign) or at the scrotum (Bryant sign).⁵

The time to the appearance of the Cullen or the Grey Turner sign is thought to be at least 24 hours after the onset of retroperitoneal bleeding and averages about 3 days after the onset of pancreatitis.³

REFERENCES

1. **Cullen TS.** A new sign in ruptured extrauterine pregnancy. *Am J Obstet Gynecol* 1918; 78:457.
2. **Grey Turner G.** Local discoloration of the abdominal wall as a sign of acute pancreatitis. *Br J Surg* 1910; 7:394–395.
3. **Dickson AP, Imrie CW.** The incidence and prognosis of body wall ecchymosis in acute pancreatitis. *Surg Gynecol Obstet* 1984; 159:343–347.
4. **Harris S, Naina HV.** Cullen's sign revisited. *Am J Med* 2008; 121:682–683.
5. **Bosmann M, Schreiner O, Galle PR.** Coexistence of Cullen's and Grey Turner's signs in acute pancreatitis. *Am J Med* 2009; 122:333–334.
6. **Bem J, Bradley EL 3rd.** Subcutaneous manifestations of severe acute pancreatitis. *Pancreas* 1998; 16:551–555.
7. **Meyers MA, Feldberg MA, Oliphant M.** Grey Turner's sign and Cullen's sign in acute pancreatitis. *Gastrointest Radiol* 1989; 14:31–37.
8. **Mabin TA, Gelfand M.** Cullen's sign, a feature in liver disease. *Br Med J* 1974; 1:493–494.

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