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Demarcated Truncal Jaundice: A Sign of Retroperitoneal Bile Leakage

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and heart failure hospitalizations for patients with heart failure and left ventricular dysfunction. Regardless of whether ARBs are considered to be first- or second-line agents to ACE inhibitors, ARBs should be included as part of the heart failure and acute MI quality indicators because they improve clinical outcomes.

We agree with Drs. Peeters and Tsikouris, Mr. Regier, and Mr. Jensen that the efficacy of ACE inhibitors and ARBs may depend on their relative dosing. We did not perform separate analyses based on dosing, however, because the target doses for the ARBs in our study varied widely and we are not aware of standardized criteria for the interconversion of ARB doses.

Finally, we agree with Mr. Regier and Mr. Jensen that in our Table, the doses of valsartan and captopril in the VALIANT study were reported as the target doses from the initial hospitalization but should have been the target doses on 3-month follow-up, which were twice as high.

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CLINICAL OBSERVATION

Demarcated Truncal Jaundice: A Sign of Retroperitoneal Bile Leakage

TO THE EDITOR: *Background:* The usual treatment for abdominal collection of bile is percutaneous drainage followed by endobiliary stenting for persistent leaks (1). Delayed drainage can have severe consequences (1). Retroperitoneal bile leaks may behave differently and require different care.

Case Reports: A 43-year-old man was referred with abdominal pain and jaundice 4 days after cholecystectomy. The surgeon had difficulty dissecting the cystic duct, which retracted into the peritoneal fold when it was clipped and divided. A tube placed at the surgical site drained small quantities of serous fluid, but not bile. Skin discoloration was limited to the flanks and groin bilaterally, more marked on the right side than the left. The color of the sclera and the rest of the body, as well as the serum bilirubin level, were normal. Endoscopic retrograde cholangiography demonstrated a cystic duct bile leak. Sphincterotomy was performed, and the discoloration resolved in 4 days.

The second patient, a 59-year-old man, was transferred 5 days after laparoscopic cholecystectomy because of jaundice and a swollen

Figure 1. Demarcation of bile staining in the flank and thigh after laparoscopic cholecystectomy, correlating with the lateral and lower insertions of the fascia of Scarpa.

penis. Jaundiced discoloration and edema of the torso, perineum, and upper thighs contrasted with the sclera, face, and arms, which were normal. A horizontal border in the upper chest and upper thigh

Figure 2. Demarcation of truncal bile staining after laparoscopic cholecystectomy.

The upper limit correlates with the horizontal superior attachment of the fascia of Scarpa.

demarcated the affected area (Figures 1 and 2). Helical computed tomography revealed retroperitoneal fluid that tracked below the fascia of Scarpa to the lower abdominal wall from behind the liver (Figure 3). Endoscopic retrograde cholangiography demonstrated a leak from the cystic stump, and sphincterotomy was performed. Again, no evidence of local inflammation was seen in the areas of staining, which resolved 3 days later.

Discussion: In these patients, "jaundice" was due to bile leakage from the cystic duct within the peritoneal fold of the hepatoduodenal ligament. Tracking along retroperitoneal planes, bile stained tissue deep to the fascia of Scarpa, the membranous layer of the superficial fascia, which limited the area of discoloration by its attachments to the clavipectoral fascia, the lumbar fascia, and the fascia lata of the thigh. The perineal fascia permitted staining of the perineum. This same area is affected by urine extravasation following traumatic disruption of the bulbous urethra.

Leakage of bile from the common bile duct into the retroperitoneal space has been reported before (2). Retroperitoneal perforation of the duodenum may cause bile staining of the scrotum (3). In the 19th century, George Henry Fox is reputed to have noted bruising of the groin with hemorrhagic pancreatitis (4). In 1918, Cullen described periumbilical ecchymosis as a sign of hemorrhage from an ectopic pregnancy (5). Later, it was associated with hemorrhagic pancreatitis. In 1920, Grey Turner described bluish discoloration of the flanks as a sign of hemorrhagic pancreatitis (6). These cutaneous manifestations of retroperitoneal bleeding all lie within the region of truncal jaundice observed in our patients. To our knowledge, the anatomic role of the fascia of Scarpa in these clinical signs has not previously been discussed.

The characteristic feature of the clinical sign described here is the demarcation between jaundiced and unaffected areas of the body. The flanks and the genitalia are stained more than would be expected by examination of the sclera or estimation of bilirubin level. Superiorly, a horizontal line about 3 cm below the clavicles, corresponding to the insertion of the fascia of Scarpa into the clavipectoral fascia, allows an easy comparison between the jaundiced trunk and unaffected adjacent areas, such as the neck, shoulder, and arm. Similarly, a line 3 cm below the groin skin crease corresponds to the insertion of the fascia of Scarpa into the fascia lata of the thigh. In former times, such a sign might have been called *icterus marginatus*.

Conclusion: Bile staining of the tissues in the body wall does not appear to have a detrimental local effect. After laparoscopic cholecystectomy, the most likely source of such bile staining is a leak from the biliary tree within the peritoneal fold of the hepatoduodenal ligament. The significance of this diagnosis is that intraperitoneal drainage may not evacuate the bile collection. In contrast to intraperitoneal collections, the best initial approach to retroperitoneal bile leaks may be endobiliary drainage.

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Figure 3. Helical computed tomogram of the abdomen showing edema below the fascia of Scarpa on the right side of the abdomen in a patient with retroperitoneal bile leakage after laparoscopic cholecystectomy.

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GENERAL COMMENTARY

The International Campaign to Revitalise Academic Medicine

TO THE EDITOR: Academic medicine has been in decline over recent years and is facing a crisis in recruitment. In response to this trend, a working party was appointed to coordinate the International Campaign to Revitalise Academic Medicine (1). More than 40 international medical journals, including *BMJ* and *The Lancet*, and a number of prominent organizations are supporting this campaign (2). The campaign aims to consult all stakeholders and provide a truly international response to the challenges and opportunities facing academic medicine.

Teaching is central to academic medicine, and those who work in this field have traditionally been the educators of tomorrow's doctors. Students are significant stakeholders in academic medicine, so student involvement in this campaign is crucial. Consequently, a student advisory group to the International Campaign to Revitalise

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