Massively dilated common bile duct: an unusual aetiology for nutcracker phenomenon

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DESCRIPTION

A 45-year-old man presented with recurrent haematuria. He also had history of upper abdominal pain for 1 month. On examination he had left varicocele. On ultrasonogram (USG), he had a grossly dilated common bile duct (CBD). No abnormality of the urinary tract was seen on USG. His coagulation profile, kidney and liver function tests were normal. Contrast-enhanced CT (CECT) scan of the abdomen was done that was suggestive of a massively dilated CBD with maximum diameter of 4.2 cm (figure 1), which was compressing the left renal vein (LRV) against the abdominal aorta (figure 2). There was no dilation of intrahepatic biliary radicals so a provisional diagnosis of type 1 choledochal cyst was made, and he was referred to the department of gastrointestinal surgery where he underwent cholecystectomy with resection of dilated CBD with Roux-en-Y hepatico-jejunostomy. Intraoperatively, there were adhesions around the cyst wall that were easily separated; the rest of the operation was completed in standard manner. The anatomy of dilated biliary system causing dilation of LRV is illustrated in figure 3. The histopathology was consistent with choledochal cyst having fibrosis and smooth muscle hyperplasia along with inflammatory infiltrates in the walls and intestinal metaplasia. Three months postsurgery, the patient is doing fine, and his urinary complaints have settled.

The compression of LRV causing obstruction of its flow into the inferior vena cava is known as nutcracker phenomenon (NP).¹ Most commonly, this occurs due to its compression between the superior mesenteric artery and abdominal aorta. There are two important anatomical considerations of classical NP; first, in normal individuals, the angle at the origin of superior mesenteric artery from

Figure 2 Dilated common bile duct (arrow head) compressing the left renal vein (LRV); also seen is the dilated main pancreatic duct (arrow).

aorta (aortomesenteric angle) is close to 90°, whereas in patients with NP, this angle is <90°. Second, there are many venous tributaries entering the LRV; if valves are absent in these tributaries, then there is effective decompression of LRV, whereas presence of valves causes the LRV to distend, and the subsequent increased pressure results in formation of varices and collaterals.² Other causes of NP include external compression by pancreatic neoplasm, enlarged lymph nodes or arching testicular artery, but the occurrence of NP due to external compression by nearby organs is rare, limited to anecdotal case reports. NP can be *anterior nutcracker* as described above or *posterior nutcracker* in patients with retroaortic renal vein, compressing the LRV between the aorta and vertebral bodies. The symptoms of NP vary from asymptomatic microscopic haematuria to severe pelvic congestion. Haematuria is the most common presenting feature followed by flank pain. Varicocele is seen in up to 10% of cases.² For patients with mild symptoms, conservative

Figure 1 Dilated common bile duct (arrow) on coronal section of CECT scan. CECT, contrast-enhanced CT.

Figure 3 Illustration showing the normal anatomy on left and dilated common bile duct (CBD) compressing the left renal vein (LRV) on the right. A, aorta; IVC, inferior vena cava; GB, gall bladder; LK, left kidney; RK, right kidney.

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treatment and observation are best. For intractable symptoms, nephrectomy may be required. Internal and external stenting of the LRV have also been described.³ In our case, the inciting cause of NP was type 1 choledochal cyst so surgery was performed, which relieved the associated symptoms. To our knowledge, this is the only case reported where a dilated CBD was the cause of NP.

Learning points

- ▶ Diseases of retroperitoneum may cause nutcracker phenomenon (NP) and symptoms related to NP may be the presenting complaint in such patients.
- ▶ Most cases with NP can be treated conservatively, but in cases when some other disease process is the inciting factor than its treatment usually resolves NP as was the case in our patient.

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