Nephrology Dialysis Transplantation

Nephroquiz for the Beginner
(Section Editor: T. J. Rabelink)

The patient with intermittent abdominal pain and no renal disease*

Patient history

A 18-year-old asthenic patient, who had no severe or chronic diseases as a child, developed an episode of asthenia and fatigue due to iron deficiency anaemia. The aetiology of the anaemia could not be clarified, but the symptoms improved under oral iron substitution. Two years later, the patient complained for the first time about intermittent abdominal pain, primarily located in the lower left quadrant. The pain was independent of food ingestion. It was frequently associated with alternating diarrhoea and constipation. The patient was admitted to an outside hospital for further investigation, but all biochemical and imaging (US-scans, endoscopy) investigations were normal. First a diagnosis of an irritable bowel syndrome was made. Laparoscopic evaluation showed an inflamed Meckel’s diverticulum, which was excised. Postoperatively the pain improved for 3 months, but finally developed again with same intensity. Additionally, the patient complained now about episodes of paroxysmal tachycardia, occurring primarily after food ingestion, with a heart rate between 110 and 140 per minute.

At this point, the patient was admitted to our hospital. Again biochemical, radiological, sonographical and endoscopical investigations were completely unremarkable. There was no evidence of celiac disease or lactose malabsorption, but a CT-scan of the abdomen showed severe stenosis of the left renal vein (Figure 1). The left testicular vein was distinctly enlarged from its embouchement into the renal vein down to the true pelvis and the paravesical veins showed massive variciform dilation (Figure 2).

Questions

• What is your diagnosis?
• What additional diagnostic procedure would you propose?
• How can this finding explain the patient’s symptoms?
• What would be the therapy of choice?

(Answers on next page)

*This work is dedicated to the seventieth birthday of Professor Dr Dr h.c. K.-H. Meyer zum Büschenfelde, FRCP, Mainz, Germany.

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The finding of left renal vein compression was confirmed by selective phlebographic imaging. The stenosis was located at the proximal third of the left renal vein. The pressure difference between vena cava and the distal left renal vein was more than 15 mmHg (normal: <5 mmHg, Figure 3). The physiologic blood flow into the vena cava was delayed and a substantial retrograde flow into the testicular vein was observed. This vessel and the paravesical veins were massively dilated (Figure 4). The CT-scan suggested, that the stenosis of the renal vein was obviously due to non-tumourous compression directly in front of the abdominal aorta. The findings suggested a so called ‘nutcracker-syndrome’ of the left renal vein (analogous to the superior mesenteric artery syndrome). This syndrome is caused by a congenital proximal embouchement of the left renal vein into the caval vein. Consecutively, the vessel is compressed at the angle between abdominal aorta and the overlying superior mesenteric artery (Figure 5).

After the diagnosis had been confirmed surgical
The patient with intermittent abdominal pain and no renal disease was treated by surgical correction of the proximal embouchement of the left renal vein, i.e. the vessel was dissociated from the vena cava (Figures 6 and 7) and, after mobilization, reinserted 3–4 cm distal (Figure 8).

The nutcracker-syndrome of the left renal artery is usually not found in association with gastrointestinal symptoms. It is a rare differential diagnosis of haematuria, especially in young patients. Our patient had no haematuria, but a history of iron deficiency anaemia possibly caused by occult bleeding from the bladder, secondary to the elevated pressure in the paravesical veins.

The relation between the vessel anomaly and gastrointestinal complaints was presumably complex. Regurgitation of blood into the testicular and splanchnic veins and consecutive massive dilation may have affected left-sided abdominal structures, presumably the lumbar nerve plexus. Postprandial tachycardia may have been provoked by enhanced postprandial blood flow in the mesenteric artery, causing further compression of the renal vein and further flow reduction in the compressed vessel, thus activating the sympathetic nervous system. These interpretations are conjectural.

In any case, the decision to try surgical correction...
is justified in retrospect by the stable absence of symptoms for more than 2 years.

Suggested reading


Ph. Hilgard, K. Oberholzer, R. Hohenfellner, G. Gerken.