An 84-year-old male hemodialysis patient was admitted to our service for abdominal pain, nausea, and vomiting that occurred during a dialysis session. End-stage renal failure secondary to diabetic nephropathy had led to his starting hemodialysis 6 years earlier. His past medical history included type 2 diabetes complicated by severe arteritis with amputation of toes on the two lower limbs and hypertension.

Clinical examination revealed blood pressure at 125/60 mmHg (no hypotension initially, probably because of compensation at the beginning of the process), tachycardia at 147 beats/min, and diffuse abdominal pain to palpation. Laboratory tests revealed a moderate inflammatory syndrome (C-reactive protein 3.25 mg/dL), although the lactate dehydrogenase level was normal. Abdominal tomodensitometry showed hepatic portal venous gas (HPVG), or aeroportia (Figure 1) and numerous air-fluid levels with pneumatosis intestinalis (Figure 2) in the context of severe mesenteric atherosclerosis. Because of the extent of the lesions, his advanced age, and major co-morbidities, it was decided not to intervene surgically. Unfortunately, his condition gradually worsened, and he died soon afterwards. Early detection of HPVG and pneumatosis intestinalis signs is crucial for prompt diagnosis and management of acute mesenteric infarction. [Hong Kong J Nephrol 2011;13(1):39–40]

Key words: acute mesenteric infarction, aeroportia, hemodialysis, hepatic portal venous gas, pneumatosis intestinalis

Aeroportia and Pneumatosis Intestinalis in a Hemodialysis Patient

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Hepatic portal venous gas (HPVG), the existence of gas in the hepatic portal venous system, is associated with a high mortality rate. It is rarely described in patients on chronic hemodialysis. We report a case of HPVG in an 84-year-old man who was on hemodialysis. He experienced abdominal pain, nausea, and vomiting during the dialysis session. Abdominal tomodensitometry revealed the presence of HPVG and numerous air-fluid levels with pneumatosis intestinalis in the context of severe mesenteric atherosclerosis. The patient’s condition gradually worsened, and he died soon afterwards. Early detection of HPVG and pneumatosis intestinalis signs is crucial for prompt diagnosis and management of acute mesenteric infarction. [Hong Kong J Nephrol 2011;13(1):39–40]

Key words: acute mesenteric infarction, aeroportia, hemodialysis, hepatic portal venous gas, pneumatosis intestinalis

A hepatic portal venous gas (HPVG) is a radiological feature, the main etiology of which is ischemic digestive pathology (70% of cases) [1], although intra-abdominal abscesses and other, rarer causes (e.g. ulcerative colitis, small bowel obstruction) can also be involved. Early detection of HPVG and pneumatosis intestinalis signs is crucial for prompt diagnosis and management of acute mesenteric infarction.
obstruction, gastric ulcer, diverticulitis, severe pancreatitis, iatrogenic cause) have also been found [2]. HPVG is usually considered an ominous prognostic sign and is associated with a high mortality rate. In contrast, pneumatosis intestinalis, although sometimes associated with life-threatening causes, may have a relatively benign etiology. Some examples include pulmonary disorders (asthma, emphysema), connective tissue disease (scleroderma), intestinal disease (inflammatory bowel), and iatrogenic causes (barium enema, endoscopy). Mucosal damage, bowel distension, and sepsis predispose to HPVG. In most cases, aeroportia associated with pneumatosis intestinalis requires immediate surgical care.

Hepatic portal venous gas has rarely been described in patients on chronic hemodialysis. Iguchi et al. reported a case of HPVG in a 59-year-old woman on hemodialysis that seems to have been caused by non-occlusive mesenteric ischemia [3]. Another example, reported by Morimoto et al., was a case of recurrent HPVG in a patient with hemodialysis-dependent chronic renal failure [4]. Renal failure seems to be a risk factor for the development of this condition. Patients in chronic renal failure harbor a large number of microbial flora, anaerobes and aerobes, in the small intestine. During hemodialysis, the cell–cell structure may be impaired and promote bacterial translocation. This may be one mechanism of HPVG formation. Another is prolonged hypotension that occurs during hemodialysis, which is associated with diminution of flow to the small intestine resulting from primary vasospasm of the peripheral arterioles. This clinical entity, known as non-occlusive mesenteric ischemia, may cause mucosal injury and therefore permit passage of intraluminal gas into the portal venous system, with no evidence of bowel necrosis [4].

The amount of intrahepatic portal venous gas, estimated qualitatively, is not correlated with patient mortality. However, this sign is associated with a poor prognosis and reflects potentially serious disease. When HPVG and bowel ischemia are associated, they are related to transmural necrosis in 91% of cases and to a high mortality rate (75%) [5]. The mortality rate for aeroportia related to acute mesenteric ischemia is higher than that associated with other causes [6].

In conclusion, HPVG is a radiological sign associated with a high mortality rate. The prognosis of a patient with HPVG is linked to the own prognosis of the underlying pathology and the severity of the disease causing the portal venous gas. Hemodialysis-dependent patients seem to be at risk for the development of HPVG.

REFERENCES