A nephrologist will spend a proportion of his time seeing patients with primary gastrointestinal diseases, and evaluating or treating gastrointestinal problems in renal patients.

Gastrointestinal and kidneys disease are not necessarily related, as a coincidence may be involved. In other cases, the underlying disease may be atypical with mild abdominal symptoms and correct diagnosis may be difficult. That’s why these patients require special attention in clinical care (Adv. Clin. Exp. Med. 2003, 12, 2, 237–241).

**Key words:** gastrointestinal complications, chronic renal failure, hemodialysis, kidney transplantation.

**Streszczenie**


**Słowa kluczowe:** powikłania żołądkowo-jelitowe, przewlekła niewydolność nerek, hemodializa, przeszczep nerkii.

The gastrointestinal patient with renal problems

Several gastrointestinal diseases are associated with an unusually prevalence of renal problems [2]. Nephrolithiasis and urolithiasis are found in approximately 5% of patients with ulcerative colitis (Tab. 1), often complicated by urinary tract infection. Renal amyloidosis of the AA type was reported in ulcerative colitis patients. The most frequent and most severe renal complication is seen in Crohn’s disease (Tab. 2). These include: urinary tract infection from enterovesical fistula, urinary tract obstruction from inflammation of the ureteric ostium, calcium oxalate or urate stones in 25% of patients and renal amyloidosis of the AA type.

Amyloidosis is relatively common in Crohn’s disease, while being very rare in ulcerative colitis. Other renal problems in Crohn’s disease is a rise in serum amyloid A protein and C-reac-
tive protein, proteinuria and glomerulonephritis, which may be of immunocomplex origin. Several cases of interstitial nephritis with acute renal insufficiency have been noted in Crohn’s disease after 5−aminosalicylic acid therapies. Other renal complications in the gastrointestinal diseases are on the Table 3. IgA glomerulonephritis is more frequent in patients with coeliac disease than in the general population. Glomerulonephritis (GN) is a common complication of Reiter’s syndrome - characterized by colitis, urethritis and inflammatory eye disease. IgA nephropathy is also seen in some patients with Behcet’s disease, which is characterized by recurrent aphthous ulceration in the oral cavity, rectum, or elsewhere in the gastrointestinal tract. Glomerulonephritis, sometimes of the rapidly progressive type, may be a complication of gastrointestinal carcinoma, particularly colonic carcinoma. GN or interstitial nephritis can complicate Yersinia infection. Nephrolithiasis and calcium oxalate stones are frequent in chronic diarrhoeal illness and short bowel syndrome. Biliary acid loss and jejunoileal bypass are associated with renal oxalosis.

### The renal patient with gastrointestinal (GI) problems

The nephrologist is more likely to see renal patients with GI problems. GI complications are most often due to chronic renal failure [3]. These complications may be severe and may even lead to death. The most frequent GI complications in renal patient include oral lesions, esophagitis, peptic ulcer, colon bleeding or perforation, and pancreatitis [4].

### Oral lesions

Aphthous ulcers are frequent and often recur in the same patient. The cause is Herpes simplex or zoster virus Leukooplakia, characterized by white plaques, is histologically benign hyperkeratosis, but may transform into carcinoma. Candidiasis is frequent after renal transplantation and can be the result of immunosuppressive or antibiotic treatment. Tumors are more frequent than in the general population, and also Kaposi’s sarcoma is frequent.

### Esophageal disorders

Esophagitis of the terminal esophagus occurs as a complication of hiatus hernia, which is frequent in patients treated by continuous ambulatory peritoneal dialysis (CAPD). Candidal esophagitis is diagnosed primarily in renal transplant recipients (RTx).
Peptic lesions after RTx are more common than in the general population. The following factors contribute to their occurrence: history of previous peptic ulcer, elevated gastric acid secretion, H. pylori colonization, high-dose corticosteroids, emotional stress, cigarette smoking. In this regard, it must be remembered that, although the prevalence of peptic ulcers is not increased in dialysis patients, almost 50% of these patients suffer from dyspepsia and show elevated gastric acid secretion. Moreover, about half of renal transplant recipients have H. pylori colonization of the stomach [6]. The role of corticosteroids is still controversial, but it is likely that high doses of corticosteroids may be a risk factor for bleeding from peptic lesions after RTx, which occurred immediately after the administration of high-dose methylprednisolone pulses.

Finally, cigarette smoking may lead to ulceration by reducing the pyloric sphincter pressure and by decreasing pancreatic bicarbonate secretion. The following table shows the occurrence of peptic lesions and peptic lesion bleeding within 6 months post-RTx (Tab. 5) [7].

Brunner reported [9] death rates as high as 4.7%. Even after the introduction of cyclosporine and reduction of corticoid doses, Steger reported [10] peptic lesion rates of 25% during endoscopies performed 10–14 days post-RTx; mortality was said to be 4%. Benoit [11], using postoperative prophylaxis with H2 blockers, reported peptic lesions rates of 8.5%, and bleeding-related mortality to be as low as 0.7%. The next tables (Tab. 6 and 7) show the situation in our department – Clinical of Nephrology ICEM, Prague [12]. In the 1970, peptic lesion bleeding occurred, prior to the introduction of prophylaxis, in 7% of patients, and was the cause of death in 3% of patients. With prophylaxis using H2 blockers, bleeding decreased to 1.5%, death below 1%. With proton pump inhibitor’s (PPI’s) – no bleeding, no death we can see. We conclude, that prophylaxis using H2 blocker’s markedly reduces the risk of peptic lesions and gastroduodenal bleeding. But, proton pump inhibitor’s eliminate the risk altogether [13].

### Colon disorders

There is an increased risk of colonic complications in CRI and after RTx, particularly in aged subjects and in patients with polycystic kidney disease.

### Table 5. Incidence of peptic lesions bleeding within 6 months post RTx

<table>
<thead>
<tr>
<th>Pre-cyclosporine era</th>
<th>n</th>
<th>bleeding</th>
<th>death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunner et al. EDTA report 1978</td>
<td>276</td>
<td>23.5%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Blohme et al. 1975</td>
<td>468</td>
<td>10.2%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

### Cyclosporine era

<table>
<thead>
<tr>
<th></th>
<th>Peptic lesions</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steger 1984–1986</td>
<td>134 (25%)</td>
<td>614 (8.5%)</td>
</tr>
<tr>
<td>Benoit 1984–1988</td>
<td>3 (1.5%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Broun

### Table 6. Elimination of the risk of acute gastroduodenal bleeding 6 weeks after RTx

<table>
<thead>
<tr>
<th>No. prophylaxis</th>
<th>ICEM 1969–1979</th>
<th>n 176</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic lesions</td>
<td>18</td>
<td>10.2</td>
</tr>
<tr>
<td>Bleeding</td>
<td>13</td>
<td>7.4</td>
</tr>
<tr>
<td>Death</td>
<td>6</td>
<td>3.4</td>
</tr>
</tbody>
</table>

### Prophylaxis with H2 blockers

<table>
<thead>
<tr>
<th>Prophylaxis with H2 blockers</th>
<th>ICEM 1981–1990</th>
<th>n 420</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic lesions</td>
<td>7 (1.6%)</td>
<td>0</td>
</tr>
<tr>
<td>Bleeding</td>
<td>5 (1.2%)</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>0 (0%)</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 7. Elimination of the risk of acute gastroduodenal bleeding 6 weeks after RTx

<table>
<thead>
<tr>
<th>Prophylaxis with PPI’s</th>
<th>IKEM 1994–1998</th>
<th>n 478</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic lesions</td>
<td>H2 blocker n 200 (%)</td>
<td>PPI n 278</td>
</tr>
<tr>
<td>3 (1.5%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5 (1.5%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1 (0.5%)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
The most frequent are: diverticular disease, diverticulitis, colon perforation, pseudomembranous colitis, ischemic colitis, angiodysplasia, teleangiektasie, colon bleeding. Colon bleeding may be associated with all the above conditions. Cecum or ascending colon bleeding can occur in association with severe CMV infection [14]. Colon perforation may complicate diverticular disease, but the clinical presentation may be atypical with mild abdominal symptoms. The prognosis is grim, with mortality rates ranging between 20% and 66% (20% Benoit et al. 1993, 66% Pollak et al. 1985, 12% Lederman et al. 1998). However, early diagnosis and surgery under a broad spectrum of antibiotics and reduction of immunosuppressive therapy improved the prognosis in a recent series [15].

**Pancreatitis**

Acute posttransplantation pancreatitis is an infrequent complication with a high risk of mortality. The incidence of acute pancreatitis in RTx patients ranges around 1% [16]. If pancreatitis remains sterile, mortality is about 10%, while it ranges between 30 and 40% if there is an infected necrosis. Several factors may contribute to the pathogenesis of pancreatitis in CRI. There is a well-known association between end-stage renal disease and acute pancreatitis with radiological findings ranging from normal anatomy to fulminant and necrotizing pancreatitis. Secondary HPT may cause inflammatory changes in the pancreas. Many dialysis patients have a silent gallstone disease, which may increase the risk of acute pancreatitis either by obstruction or by reflux of biliary or duodenal contents, which stimulate pancreatic secretion. Corticosteroids, azathioprine and cyclosporine can all be responsible for pancreatitis. Changes consistent with the presence of cytomegalovirus infection (CMV). CMV in the pancreas has been seen in patients with the posttransplant pancreatitis, suggesting a possible role for CMV infection. Hyperlipidemia, especially hypertriglyceridemia, which may be frequent in transplant pts, has been considered as predisposing factor for pancreatitis. Risk factors cholelithiasis, ethylalcohol, end-stage renal failure per se, secondary hyperparathyroidism, corticosteroids, azathioprine, calcineurin inhibitors, CMV infection, hyperlipidemia. Acute pancreatitis often leads to formation of pseudocyst, which can be differentiated, by ERCP or CT (Fig. 1).

**Cholelithiasis**

There is an increased risk of cholelithiasis in patients with CRI and after RTx. In end-stage CRI, we observed a pathological composition of the bile (Fig. 2) [17], with an increased saturation index and, consequently, an increased risk of cholelithiasis. HD patients have been shown to have a higher incidence of cholelithiasis [18, 19]. After RTx, a role is played by the effect of CyA, which enhances the lithogenicity of the bile; it may also induce cholestasis by inhibiting ATP-dependent bile salt transport [20]. Cholelithiasis may expose the patient to the risk of severe complication after RTx, including cholecystitis, cholangitis, pancreatitis, obstructive jaundice [21]. Some authors recommend prophylactic cholecystectomy [22].

**Conclusions**

Gastrointestinal diseases with an unusually prevalence of renal complications are Crohn’s disease and ulcerative colitis. Renal patients with serious gastrointestinal complications are patients in chronic renal insufficiency and after renal transplanta-
tion. Peptic lesions were associated with the high risk of bleeding especially in hemodialysis and after renal transplantation, but prophylaxis with H₂ blocker’s and proton pump inhibitor’s markedly reduces the risk of gastroduodenal bleeding. Serious gastrointestinal complication with high mortality is colon perforation usually in diverticular disease. Early diagnosis improved the prognosis, but the clinical presentation may be atypical with mild abdominal symptoms. There is an increased risk of cholelithiasis in transplant patients. Cholelithiasis may expose the patient to the risk of severe complication, including cholecystitis, cholangitis and acute pancreatitis with an unusual course and the high mortality.

References


Address for correspondence:
Olga Mareckova
Department of Nephrological Institute for Clinical and Experimental Medicine
Videnska 1958/9
140 21 Prague 4
Czech Republic