**Case Report**

**Prolonged renal dysfunction secondary to renal-artery stenosis in the elderly—it is never too late**

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**Introduction**

Renal-artery stenosis (RAS) is the cause of hypertension in 1–3% of patients. RAS is a major cause of renal failure [1]. The majority of renal-artery lesions, especially in the elderly, are atherosclerotic in origin [2–4]. In addition to hypertension, patients having bilateral renal-artery stenosis or stenosis of a single kidney may develop renal failure [1,5]. Both conditions may be reversed by relieving the obstruction, either by a surgical approach or angioplasty [6,7].

We describe an elderly patient with prolonged renal failure necessitating peritoneal dialysis, and uncontrolled hypertension, who completely recovered following angioplasty.

**Case report**

A 79-year-old woman presented to the emergency ward with pulmonary oedema. The patient was known to have had hypertension for the last 15 years, which had been treated with beta-blockers and thiazide diuretics. The patient had a prior transient cerebrovascular event and peripheral vascular disease. She had presented 2 weeks prior to the current admission with pulmonary oedema, and had been discharged from the emergency room with enalapril.

During the current episode the blood pressure was 240/120 mmHg. The patient was diagnosed as having a hypertensive emergency and was treated with intravenous nitroglycerin, hydralazine, and frusemide.

On examination, the subject was an obese tachypnoeic patient with blood pressure of 240/120 mmHg, and a pulse of 96. Rales were heard over the lung bases and an audible S4 was detected over the heart. The abdomen was soft with no extremity oedema. White blood count was 10.3 g/l, haemoglobin was 10.9%, and platelets were 168,000. Table 1 shows the biochemistry results.

The patient developed renal failure that necessitated peritoneal dialysis. She was hospitalized for over a month in the medical intensive care unit with recurrent episodes of pulmonary oedema and excessive blood pressure in spite of peritoneal dialysis and maximal antihypertensive treatment. An abdominal ultrasound demonstrated a right kidney measuring 7 cm and a left measuring 10 cm. A selective arteriography of the renal arteries demonstrated severe obstruction of the left renal artery (Figure 1). An angioplasty procedure was successful. Following the procedure there was a marked improvement in the patient’s condition. All antihypertensive agents were stopped and renal functions returned to normal. Dialysis was stopped and the Tenckhoff catheter removed.

Four months later, the patient was hospitalized again because of a hypertensive crisis. The blood pressure was 220/120 mmHg and the creatinine rose to 206 μmol/l. A repeated arteriography demonstrated a recurrent occlusion of the proximal left renal artery. Following the insertion of a stent (Figure 2), the patient’s blood pressure stabilized again.

After 1 year of follow-up, the patient’s blood pressure and renal function are stable.

**Discussion**

Atherosclerotic renovascular stenosis is an important treatable cause of hypertension and renal dysfunction in elderly patients [2]. Patients with widespread atherosclerosis are prone to have renal-artery involvement [8]. Their disease tends to progress if the stenosis is not relieved [9].

Two choices are available for the treatment of renovascular hypertension: conservative (medical) or correction of the stenosis, either surgically or by angioplasty. Medical therapy, although becoming more effective since the introduction of angiotensin-converting enzyme inhibitors (ACE-I), may lead to progressive loss of renal function and structure [2,10].

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Table 1. Biochemistry data of the patient

<table>
<thead>
<tr>
<th>Time</th>
<th>Creatinine (μmol/l)</th>
<th>Urea (mmol/l)</th>
<th>Na⁺ (mmol/l)</th>
<th>K⁺ (mmol/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two weeks before admission</td>
<td>234</td>
<td>18.3</td>
<td>142</td>
<td>4.2</td>
</tr>
<tr>
<td>Current admission</td>
<td>512</td>
<td>26.3</td>
<td>139</td>
<td>4.6</td>
</tr>
<tr>
<td>Day of angioplasty</td>
<td>709</td>
<td>39.1</td>
<td>130</td>
<td>4.4</td>
</tr>
<tr>
<td>Week following angioplasty</td>
<td>97</td>
<td>8.8</td>
<td>131</td>
<td>3.7</td>
</tr>
<tr>
<td>Normal values</td>
<td>60–106</td>
<td>3.3–6.5</td>
<td>3.5–5.0</td>
<td>135–145</td>
</tr>
</tbody>
</table>

Fig. 1. Tight stenosis of the left renal artery.

The prognosis of medically treated patients, especially the elderly, with end-stage renal disease caused by renovascular stenosis is poor. Even with dialysis the 5-year survival for these patients is 20% for patients 65–74 years of age, and 9% for patients older than 75 years [1]. Therefore correction of the stenosis is the preferred choice if applicable for the patient [2].

Although elderly patients may do better with surgery compared to angioplasty [11,12], the clinical situation may not allow it. Successful angioplasty may improve renal function and blood pressure values [13–15].

We presented a remarkable case of an elderly patient, having uncontrolled hypertension and loss of renal function caused by renovascular stenosis. The addition of an ACE inhibitor may have precipitated the uncontrolled hypertension and renal failure [2]. This patient suffered from recurrent life-threatening pulmonary oedema, barely controlled with maximal antihypertensive treatment and peritoneal dialysis. As the patient was considered to be a high-surgical-risk subject we attempted an angioplasty procedure. Following this procedure, the blood pressure stabilized completely and there was a marked improvement in renal functions that permitted cessation of peritoneal dialysis.

Similar sporadic reports of elderly patients with prolonged dialysis reversed by angioplasty have been reported by others [16]. Medical treatment for renovascular hypertension may not suffice to protect renal functions, especially in elderly patients. As their prognosis is poor, an aggressive approach should be attempted. Our unique case demonstrates that even prolonged renal insufficiency may be reversed following angioplasty.

We conclude that it is never too late to correct the stenosis, even in elderly patients with prolonged renal dysfunction.

References


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