9 Kidney Disease in Antiphospholipid Syndrome

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Even though the kidney is a major target organ in antiphospholipid syndrome (APS), until recently the renal manifestations associated with antiphospholipid antibodies (aPL) have received scarce attention. This can be explained because APS was first described in patients with systemic lupus erythematosus (SLE) and such research studies were focused on the immune-complex–mediated glomerulonephritis rather than renal vascular lesions that could be secondary. In addition, because of the frequent occurrence of thrombocytopenia and systemic hypertension, renal biopsy in APS patients would often be considered a high-risk procedure to be discouraged if not formally contraindicated [1].

Nevertheless, knowledge about renal vascular involvement in APS has slowly acquired a critical mass and it is now clear that large vessels, both arterial and venous, as well as the intraparenchymatous arteries and microvasculature may all be affected, with the clinical consequences shown in Table 9.1.

Renal Artery Lesions

Large- and medium-size vessel occlusion has been associated with APS in the context of SLE as well as in its primary form [2, 3].

Table 9.1. Renal vascular involvement in antiphospholipid syndrome.

Vascular lesion	Clinical consequences
Renal artery lesions: (trunk or main branches) Thrombosis/occlusion/stenosis?	Renovascular hypertension (severe) Renal infarcts (silent, painful, hematuria)
Glomerular capillary thrombosis leading to glomerular sclerosis (studied mainly in SLE)	Increased likelihood of renal insufficiency
Renal thrombotic microangiopathy (glomerular capillaries, afferent arterioles, and interlobular arteries) with/without focal or difuse necrosis (cortical necrosis)	Systemic hypertension (usually severe) Renal failure (mild to end stage), Proteinuria (mild to nephrotic range) Cortical atrophy
Renal vein thrombosis (unilateral or bilateral)	Renal failure (if bilateral compromise)

Renal artery occlusion/stenosis has been reported in patients with positive assays for aPL. Some of these patients had autoimmune rheumatic conditions, mainly SLE, while others had the primary APS (PAPS).

An early observation by Ostuni et al [4] described a 13 year-old girl with SLE and severe systemic hypertension. Bilateral renal artery stenosis/thrombosis resulted in a poorly perfused kidney and cortical irregularities were present in the contralateral kidney. Hernández et al [5] reported on a young woman with sudden, severe hypertension and a renal infarction who, 14 years later, developed SLE. Asherson et al [6] described a young man with PAPS, arterial hypertension, and a right renal artery stenosis with renal infarction which was thought to be caused by thrombotic occlusion. Ames et al [7] reported an instance of bilateral renal artery occlusion in a patient with PAPS and an unclear systemic disease. Of major interest is a paper by Rossi et al [8] reporting 2 cases of renovascular hypertension with renal artery stenosis and suggesting a pathogenetic link between renal artery stenosis, thrombosis, fibromuscular dysplasia, and aPL. Similar considerations were independently made by Mandreoli and coworkers [9, 10]. Particularly interesting is a report by Poux et al [11] on an athletic 35- year-old man with PAPS who suddenly developed arterial hypertension and a left renal infarction. Angiographic studies revealed complete thrombosis of the aorta below the renal arteries plus an extensive colateral circulation arising from the superior mesenteric artery. More recently, several cases of renal artery stenosis, mainly in young patients with PAPS, have been reported. These consistent findings confirm that this syndrome may be a significant cause of renal artery stenosis [12–14].

In the presence of aPL, renal infarctions result from partial or total, transient or permanent occlusion of renal arteries [4, 5, 8, 9, 15, 16]. Such occlusion may be caused by diverse mechanisms such as in situ thrombosis/stenosis of a renal artery or an embolic event originating on a verrucous cardiac valve. In still other cases the cause of a renal infarction was not found [17].

Clinically, severe systemic hypertension, pain in the renal area, hematuria, and renal failure are common forms of presentation of major vessel involvement in PAPS. As commented by Hughes et al [18], arterial hypertension may be labile in early disease. Occasionally, a silent infarct is fortuitously discovered on computed tomography (CT). It cannot be overemphasized that in cases of renal artery stenosis of unknown origin, APS must be excluded. Renal scintigraphy and selective renal angiography are useful procedures to confirm diagnosis and determine the extent of damage.

Successful treatment with antihypertensive drugs [8, 15], aspirin [16], anticoagulant therapy [4, 7, 9, 15] as well as transluminal angioplasty [6, 12, 13] has been reported. Nephrectomy, with subsequent normalization of blood pressure and secondary aldosteronism, was performed in 1 patient because the kidney was seriously and irreversibly damaged [14]. However, adverse outcomes may occur [5]. The sooner an arterial lesion causing arterial hypertension is relieved, the likelier a successful outcome.

Glomerular Capillary Thrombosis

Hyaline thrombi have been described in patients with active, usually proliferative lupus nephritis. The prevalence and significance of this finding have been carefully