Aneurysms of the renal artery and splenic artery are uncommon but clinically important, as they pose a risk of rupture with a high fatality rate. Indications for surgical or endovascular repair are based on aneurysm location and risk factors for rupture, such as aneurysm size, growth, and associated conditions, while medical management is also important. Regular surveillance with imaging is critical before and after intervention to guide treatment.

**KEY POINTS**

Renal and splenic artery aneurysms are often detected incidentally but can present acutely with dissection, rupture, or both, which are associated with high risk of death and morbidities.

Computed tomographic and magnetic resonance angiography are key to diagnosing and characterizing the aneurysm and the remaining vasculature, while ultrasonography helps in assessment and surveillance. Catheter angiography is the gold standard for diagnosis and allows the opportunity for intervention.

The individual’s risk for rupture or dissection determines the need for prophylactic intervention and is based on aneurysm size, location, growth, and other associated conditions and risk factors.

Management strategies include open and laparoscopic surgery and endovascular procedures. Regular imaging surveillance is critical after both diagnosis and interventions.

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Renal artery aneurysms are often diagnosed incidentally either during investigation of resistant hypertension or during angiography for another indication. They are detected more often now than in the past because of improvements in imaging.2

Blood pressure and renal function should be routinely assessed. Accurate measurement is important, as size is directly associated with risk of rupture and need for intervention. Cir-
cumferential calcification may be protective.2

Duplex ultrasonography is the least expensive imaging modality. Further, it does not expose the patient to radiation, and it can show a dilated vessel with turbulent flow. On the other hand, it has the lowest sensitivity and specificity, and its accuracy depends on operator experience and the patient’s body habitus.6

Multidetector computed tomographic angiography (CTA) is the most commonly used modality for assessing renal artery aneurysms. Its superior resolution can characterize anatomy using multiplanar reconstructions and volume-rendered imaging (Figure 2). On the negative side, it entails the use of nephrotoxic contrast media and radiation exposure.7

Magnetic resonance angiography (MRA) has become an alternative to CTA, with comparable accuracy and without radiation, but it is less available and costs more.6,7

Catheter angiography remains the gold standard invasive option for diagnosing renal artery aneurysm, allowing assessment of proximal and distal aneurysms, and providing the opportunity for percutaneous interventions.7

If a renal artery aneurysm is found but does not meet the criteria for intervention (see below), repeat imaging at 1, 6, and 12 months and then annually has been recommended by some experts, although guidelines are lacking.2 Ul-trasonography can be used for surveillance, and abnormalities can be confirmed by any of the other 3 modalities. Annual surveillance should also be considered after surgery at least initially, and long-term after endovascular therapy.2,8

How should renal artery aneurysm be treated?

There are no guidelines for treatment of renal artery aneurysm, and if the aneurysm has not ruptured, indications for prophylactic surgery are based on rupture risk.2 These include any of the following4:

- Large size (> 2 cm)
- Symptoms
- Refractory hypertension with significant renal artery stenosis or thromboembolism
- Childbearing age, for women.

The two main intervention options are surgical and endovascular repair. Acute rupture calls for emergency surgical repair of the aneur-
ysm with renal artery reconstruction or with nephrectomy if the kidneys are not salvageable. For elective management, surgical primary repair or endovascular repair with stents or coil occlusions can be performed for type 1 aneurysm; surgical reconstruction with a vein graft or aortorenal bypass graft typically for type 2 aneurysm; and embolization coils for type 3 aneurysm, with renal preservation whenever possible.2,9

Mortality rates during elective interventions have been less than 5% in recent studies, but up to 50% in pregnancy. Surgical complications include occlusion of the renal artery, branch, or graft; renal ischemia; and cardiac events. Endovascular complications include failed procedure (< 10%), thrombosis, embolization, and postembolization syndrome.2,10

“Postembolization syndrome” refers to a constellation of symptoms including abdominal pain, fever, and at times ileus and pancreatitis that occur in up to 30% of patients after ab-
dominal visceral arterial embolization. Overall, outcomes have improved significantly over time with earlier detection and better planning and interventional techniques.

**SPLENIC ARTERY ANEURYSM**

What is the clinical importance of splenic artery aneurysm? The prevalence of splenic artery aneurysm is 0.04% to 0.10% at arteriography and autopsy. It is often found incidentally, but accounts for about 60% of visceral arterial aneurysms.

The main risk factors or causes include portal hypertension, liver transplant, pregnancy, pancreatitis, atherosclerosis, hypertension, connective tissue disease (eg, Marfan syndrome), vasculitis, endocarditis, fibromuscular dysplasia, trauma, congenital anomalies, infection, older age, and female sex (especially multiparous women).

Symptoms occur in up to 20% of cases and include upper abdominal pain that can radiate to the shoulder, nausea, vomiting, anorexia, and gastrointestinal bleeding. Rupture presents with acute abdomen, peritoneal bleeding, and shock. The risk of rupture is 2% to 10%, with a mortality rate of 25%, and both figures are markedly higher in pregnancy.

How should splenic artery aneurysm be evaluated? Abdominal radiographs rarely detect splenic artery aneurysm. Ultrasonography has some utility as an accessible, low-cost, and radi-
RENAL AND SPLENIC ARTERY ANEURYSMS

The natural text is not provided in the image. However, the references are listed as follows:

**REFERENCES**


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