

# Renovascular Hypertension

**Renovascular Hypertension (high blood pressure)** is a common disease that is often associated with atherosclerosis, hardening and narrowing of the arteries. Hypertension is defined as a blood pressure greater than 140/80 mmHg. Hypertension affects an estimated 10-25 percent of the population of the United States. In most people, the cause of hypertension is unknown, but in a small number of people the cause is due to a narrowing of the artery supplying blood to one or both kidneys. This is known as renal artery stenosis and renovascular hypertension. This stenosis causes a decrease in blood flow, which adversely increases blood pressure. Unlike primary hypertension, renovascular hypertension cannot be controlled with medication. Fortunately, it can be more specifically diagnosed and treated through minimally invasive, nonsurgical, treatments.

One indicator of renovascular hypertension may be development of high blood pressure at a young age, especially in females. In older patients, if stable hypertension suddenly worsens or occurs with impaired renal functions then this may also indicate renovascular hypertension. In addition, renovascular hypertension may result if hypertension occurs in a patient with an abdominal aortic aneurysm or disease of the coronary, carotid or the lower extremity arteries.

## Risk Factors for Renovascular Hypertension

### Smoking and Vascular Disease

Although most people are well aware of the risk of cancer from smoking, few people realize the damage smoking causes throughout the body's vascular system. Smoking damages the blood vessels and smokers are at risk for all vascular diseases including peripheral arterial disease, stroke, heart attack, abdominal aortic aneurysm and subsequent death.

### Atherosclerosis

Atherosclerosis, or "**hardening of the arteries**," occurs when cholesterol and scar tissue build up, forming a substance called plaque inside the arteries that narrows and clogs the arteries, causing decreased blood flow. Patients with atherosclerosis in other parts of their body are 30-50% more at risk of renovascular hypertension, or renal artery stenosis. Because atherosclerosis is a systemic disease, people are likely to have blocked arteries in multiple areas of the body. These people are at increased

risk for heart disease, aortic aneurysm, peripheral arterial disease, stroke, renal hypertension and kidney failure.

### **Other Risk Factors may include:**

- Diabetes
- Heart Disease
- Family History of This Condition
- High Cholesterol
- Obesity

### **Complications from Renovascular Hypertension**

Renovascular hypertension puts stress and increased pressure on the kidney, and is a major cause of end-stage renal disease, also known as chronic renal disease, in the elderly. Vascular disease, also known as atherosclerosis, is prevalent in the United States, and as the population ages, the number of people with vascular disease will increase. So too will the number with renovascular hypertension and end-stage renal disease. People with end-stage renal disease require dialysis or kidney transplantation.

Renovascular hypertension should be suspected when the onset of hypertension occurs before age 30 or after age 50, or when stable hypertension becomes more difficult to control with medication. White males and blacks of both sexes are at higher risk and people over 50 are at higher risk.

### **Other complications may include:**

- Early death
- Hypertensive heart disease
- Myocardial infarction
- Congestive heart failure
- Renal insufficiency or failure

- Stroke
- Retinopathy, i.e., damage to the eyes from high blood pressure

## **Treatment**

In many cases, interventional radiologists can open blocked or narrowed blood vessels caused by renovascular hypertension. The interventional radiologist can treat the blocked arteries without surgery. In most cases, hospitalization and general anesthesia are not required. There is no surgical incision ? just a small nick in the skin ? and no stitches are needed. Often, patients may return to normal activity shortly after the procedure.

## **Angioplasty and Stenting Definition**

### Balloon

In this technique, the interventional radiologist inserts a very small balloon attached to a thin catheter into a blood vessel through a small nick in the skin. The catheter is threaded under fluoroscopy "real-time" guidance to the site of the blocked artery. The balloon is inflated to open the artery. Sometimes, a small metal scaffold, called a stent, is inserted to keep the blood vessel open.

### Stent

Balloon angioplasty and stenting have generally replaced open surgery as the first-line treatment because randomized trials have shown interventional therapy to be as effective as surgery for many arterial occlusions. In the past seven to ten years, a very large clinical experience in centers around the world has shown that stenting and angioplasty are preferred as a first-line treatment for more and more processes throughout the body, including renovascular disease.

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**Additional references include: UC Davis Health System, [www.ucdmc.ucdavis.edu](http://www.ucdmc.ucdavis.edu), and**

MedBroadcast, [www.medbroadcast.com](http://www.medbroadcast.com).