

Given the great strides that have been made in preventing and treating heart disease, what explains Tim Russert's sudden death last week at 58 from a heart attack?

The answer, at least in part, is that although doctors knew that Mr. Russert, the longtime moderator of "Meet the Press" on NBC, had coronary artery disease and were treating him for it, they did not realize how severe the disease was because he did not have chest pain or other telltale symptoms that would have justified the kind of invasive tests needed to make a definitive diagnosis. In that sense, his case was sadly typical: more than 50 percent of all men who die of coronary heart disease have no previous symptoms, the American Heart Association says.

It is not clear whether Mr. Russert's death could have been prevented. He was doing nearly all he could to lower his risk. He took blood pressure pills and a statin drug to control his cholesterol, he worked out every day on an exercise bike, and he was trying to lose weight, his doctors said on Monday. And still it was not enough.

If there is any lesson in his death, his doctors said, it is a reminder that heart disease can be silent, and that people, especially those

with known risk factors, should pay attention to diet, blood pressure, weight and exercise ? even if they are feeling fine.

"If there's one number that's a predictor of mortality, it's waist circumference," said Dr. Michael A. Newman, Mr. Russert's internist.

But, Dr. Newman added, most people would rather focus on their LDL cholesterol, instead of taking measures to reduce their waist size. Studies have found a waist of over 40 inches in men and 35 inches in women is a risk factor for heart disease.

Mr. Russert's cholesterol was not high, and medicine controlled his high blood pressure pretty well, Dr. Newman said. But, he added, Mr. Russert was "significantly overweight." He also had a dangerous combination of other risk factors: high triglycerides, a type of fat in the blood, and a low level of HDL, the "good cholesterol" that can help the body get rid of the bad cholesterol that can damage arteries.

Even so, Dr. Newman said, "the autopsy findings were a surprise."

In an interview, Dr. Newman and Mr. Russert's cardiologist, Dr. George Bren, said the autopsy found significant blockages in several coronary arteries, which feed blood to the heart muscle.

Blockages start out as cholesterol deposits in the artery walls that turn into lesions or plaques, narrowing the vessels. Heart attacks occur when a plaque ruptures, causing a blood clot that quickly closes the artery and pinches off the blood supply to part of the heart.

In Mr. Russert's case, the heart attack was caused by a plaque rupture in a branch of the left anterior descending coronary artery. The heart attack led to an abnormal heart rhythm that stopped his heart from pumping blood effectively and caused his death.

"What is surprising," Dr. Newman said, "is that the severity of the anatomical findings would not be predicted from his clinical situation, the absence of

symptoms and his performing at a very high level of exercise."

In 1998, Mr. Russert had a calcium score of 210 on a CT scan of the coronary arteries, a test that indicates blockages. The result called for "an intensive cardioprotective regimen," Dr. Newman said. That level can indicate a moderate to high risk of a heart attack.

Dr. Newman and Dr. Bren said that in the past year, Mr. Russert's blood pressure had risen a bit, and that they had changed his drug regimen to lower it. His heart muscle had also thickened. Some cardiologists say a thickened or enlarged heart can indicate severe heart disease and should prompt more tests, like an angiogram, to look for artery blockages. But those tests are invasive, and Mr. Russert's doctors did not think he needed them.

Had the tests been done and the true extent of blockages revealed, Dr. Newman said, Mr. Russert would probably have been advised to have bypass surgery. Dr. Bren differed, saying it was not clear that there was enough disease to prompt a recommendation for surgery.