Safer Ways to Detect Recurrence of Testicular Cancer

MRI scans might be safer and no less effective than CT scans when used in the years after testicular cancer surgery.

April 29, 2022 By National Cancer Institute

Men who undergo surgery for early-stage, low-risk testicular cancer are then monitored for several years to see if the disease comes back. The monitoring often involves regular imaging with CT scans, which expose patients to radiation.

A new study suggests that the routine use of another imaging technology, MRI, which does not require radiation, is no less effective than CT scans at ensuring that most relapses are caught before they become advanced.

The results also suggest that doctors may be able to safely reduce the frequency of CT and MRI scans used to monitor these individuals. Researchers in the United Kingdom reported their findings in the Journal of Clinical Oncology on March 17.

Men who are diagnosed with early-stage testicular cancer tend to be relatively young, and nearly all will be cured of the disease. So, doctors try to minimize the potential side effects of treatment and follow-up care.

But the safest way to monitor patients has not been clear, noted Fay Cafferty, PhD, of the Medical Research Council Clinical Trials Unit at University College London, who was the lead statistical researcher for the new study.

To investigate, Cafferty and her colleagues developed a randomized phase 3 clinical trial, which included 669 men who had surgery for early-stage seminoma testicular cancer.

The trial, called TRISST, compared outcomes after four different monitoring approaches:

- seven CT scans over 5 years
- seven MRI scans over 3 years

- three CT scans over 3 years

- or three MRI scans over 3 years

At a median follow-up of 6 years, the outcomes of patients who received the MRI scans and the lower frequency of CT scans were no worse than those of other patients, the researchers found.

Overall, monitoring detected a relapse in 82 (12%) of the men, with 10 (1.5%) detected at an advanced stage. At 5 years after surgery, nearly all the participants were still alive with no deaths related to the cancer, the researchers found.

“By using MRI instead of CT and/or reducing the number of scans, we can still detect relapses at an early stage when they can be successfully treated,” said Cafferty. “These approaches can reduce exposure to potentially harmful radiation for these patients while still providing effective monitoring in case their cancers return.”

Limiting cumulative radiation dose

Although rare, testicular cancer is the most common cancer in men aged 20 to 35.

“Because these patients are young and will be followed for so long, we worry about the cumulative radiation dose from CT scans,” said Samuel Haywood, MD, a urologist at the Cleveland Clinic who was not involved in the UK study.

In TRISST, men who received the longer schedule had scans every 6 months for the first 2 years and then once a year for the next 3 years. The shorter schedule included scans only at 6, 18, and 36 months.

Among the 82 men who had relapses, all but 5 occurred within 3 years, which suggests that scanning beyond that time may not be necessary, the research team wrote.

“We found that the benefit of having continued CT scans beyond 3 years was outweighed by the potentially harmful exposure to radiation, given the small number of men who relapsed [after 3 years] and our success at treating those patients [who had relapsed],” said study coauthor Robert Huddart, MD, PhD, of the Institute of Cancer Research, London, in a press release.

Regardless of the imaging frequency or type used to monitor patients, few had advanced-stage disease at relapse, the study authors found.

Of the relapses found at an advanced stage, 9 (2.8%) occurred in the 3-scan groups compared with 1 (0.3%) in the 7-scan group. Only 4 of the 9 relapses could have potentially been detected earlier with seven scans, the researchers noted.

Weighing the potential risks, benefits of additional scans

A potential limitation of the study was that the trial included only men with a relatively low risk of recurrence. The findings, therefore, might not apply to men with a higher risk for relapse, according to Cafferty.

Haywood expects that the UK study findings may help shape decisions in the United States about how doctors monitor patients after surgery for early-stage seminoma testicular cancer. In the United States, the most recent National Comprehensive Cancer Network guidelines recommend patients receive four CT scans over the first 2 years.

The TRISST results “suggest that we may be able to safely reduce the follow-up monitoring and change the type of scan our patients receive,” said Haywood. He cautioned, however, that MRI technology and the expertise needed to read MRI scans are less widely available than for CT scans.

Another concern of Haywood’s is that with less frequent monitoring, some patients might lose touch with the physicians who have been following them after treatment.

In addition, “MRIs tend to be more expensive than CTs, so it remains to be seen if insurance would cover this change,” Haywood added.

Cafferty and her colleagues are undertaking an analysis of health economic data to gain insights into the potential costs of less-intensive monitoring approaches in the United Kingdom. Given the costs associated with MRI, additional evidence is needed to support the use of this technology, the study authors wrote.

“We hope that the current findings will change how monitoring is done,” said Cafferty. “Reducing the number of scans, and particularly not scanning beyond 3 years, will not only reduce radiation exposure but will also reduce the burden of hospital visits for patients and for hospitals.”

This post was originally published April 19, 2022, by the National Cancer Institute. It is republished with permission.

© 2026 Smart + Strong All Rights Reserved.