How Long After Radiation Can Tumor Keep Shrinking?

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Dear OncoLink "Ask The Experts,"

How long after stopping radiation can you continue to see tumor shrinkage?

Richard Whittington, MD, Associate Professor of Radiation Oncology at the University of Pennsylvania School of Medicine, responds:

This is a complex question. The first point to be made here is that, with the exception of spermatozoa and lymphocytes (among the two most rapidly dividing cells in the body), cancer cells die what is called a mitotic death. This means that the cell dies when it attempts to divide. So if a cell does not divide, then it does not die, but just sits there. At the same time, if a cell doesn't divide, it also cannot grow and spread. For tumors that divide slowly, the mass may shrink over a long, extended period after radiation stops. The median time for a prostate cancer to shrink is about 18 months. For colon carcinomas, some may grow more quickly and others may grow more slowly. The interval between initial surgery and recurrence will predict the rate of shrinkage; the longer the interval, the slower the shrinkage. This has to be balanced against the fibrosis, or scarring, that occurs following radiation. You want to do the surgery in the time frame when you have the maximum shrinkage yet with the least fibrosis.

The second issue is the radiographic appearance of the tumor after radiation. As the tumor cells die and break up, the body's white cells clear the debris and cause an inflammatory process, like a bruise.

This inflammatory reaction can make the mass look larger, but this does not necessarily reflect tumor response or growth. These inflammatory reactions usually subside, but it may take a few months to see this on CT even up to a year on MRI. For this reason, PET scans probably give a better indicator of tumor activity.

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No