Accidental Radiation Exposure

Much about cancer from accidental radiation exposure is known from the atomic bomb survivors in Nagasaki and Hiroshima, Japan in 1945 and the survivors of nuclear power plant accidents in Chernobyl, Ukraine (1986) and Fukushima Nuclear Power Plant (Japan) in 2011. During these incidents, millions of people were exposed to high levels of radioactivity. Researchers have found that the age of the individuals at the time of the accident, the amount of radiation to which they were exposed, and their distance from the incident are very important factors in determining their cancer risk. Thyroid cancer and leukemia are the most common cancers seen in this population. Long-term studies with Japan's atomic bomb survivors have found significantly higher rates of cancers of the oral cavity, esophagus, stomach, colon, liver, lung, non-melanoma skin, breast, ovary, bladder, nervous system, and thyroid.

Thyroid cancer is several times more common in children and adolescents who lived near Chernobyl. Other than the adults involved with the cleanup after the accident and those who lived closest to the power plant, most survivors did not show a higher risk of developing thyroid cancer. This illustrates the point that children and those in closest proximity to the accident are affected the most by exposure from a radiation accident.

Why thyroid cancer? Several reasons are proposed as to why thyroid cancer is the most common type of cancer seen in survivors of the atomic bomb and Chernobyl, particularly in those that were children or adolescents at the time of the events. The thyroid gland in children tends to be more "sensitive" to iodine, and thus the radioactive iodine released by these events concentrates in the thyroid. Children may have also ingested milk either from their mothers or cattle that could have been another source of increased iodine exposure. There is some thought that many children may have been Iodine deficient and thus more susceptible to absorbing the iodine. Finally, because the thyroid grows very rapidly during childhood, it is more susceptible to genetic mutations caused by exposure to radiation, leading to cancer.

While you cannot change the fact that you have been exposed to radiation, it is important to notify your healthcare provider of this exposure so that appropriate screening tests can be done to either decrease the risk of developing cancer or detect cancer at an early stage.