

# Long-term risk of second malignancy and cardiovascular disease after Hodgkin lymphoma treatment

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Hodgkin's Lymphoma survivors have two- to fourfold increased risks to develop Second Malignancy and Cardiovascular disease compared with the general population. With respect to Second Malignancies, radiotherapy is associated with 1.5- to 15-fold increased risk of solid malignancies. The relative risk (RR) of solid tumors increases steadily with increasing follow-up time from 5 to 15 years since radiotherapy, and remains elevated for at least 40 years.

Radiotherapy increases the risk of coronary heart disease, valvular heart disease, congestive heart failure (HF), and pericarditis, whereas anthracycline-containing chemotherapy increases the risks of HF and valvular heart disease. Cardiovascular toxicity following radiotherapy is usually observed from 5 to at least 35 years after therapy, whereas anthracycline-related toxicity is already observed during treatment, up to at least 25 years.

## Radiation induced secondary malignancies: a review article

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Radiation-induced second malignancies (RISM) is one of the important late side effects of radiation therapy and has an impact on optimal treatment decision-making. Many factors contribute to the development of Radiation Induced Second Metastases such as age at radiation, dose and volume of irradiated area, type of irradiated organ and tissue, radiation technique and individual and family history of cancer.

In a meta-analysis by Grantzau and Overgaard [40], Radiation Therapy for breast cancer significantly increased the risk of second non breast cancers with a Relative Risk of 1.22 (95% CI, 1.06–1.41). Even after 5 years of diagnosis, the risk remained significantly high with a Relative Risk of 1.12 (95% CI, 1.06–1.19). Lung and esophageal cancer are one of the common cancers after breast irradiation. Risk of lung cancer increased gradually with time followed by breast cancer radiation.