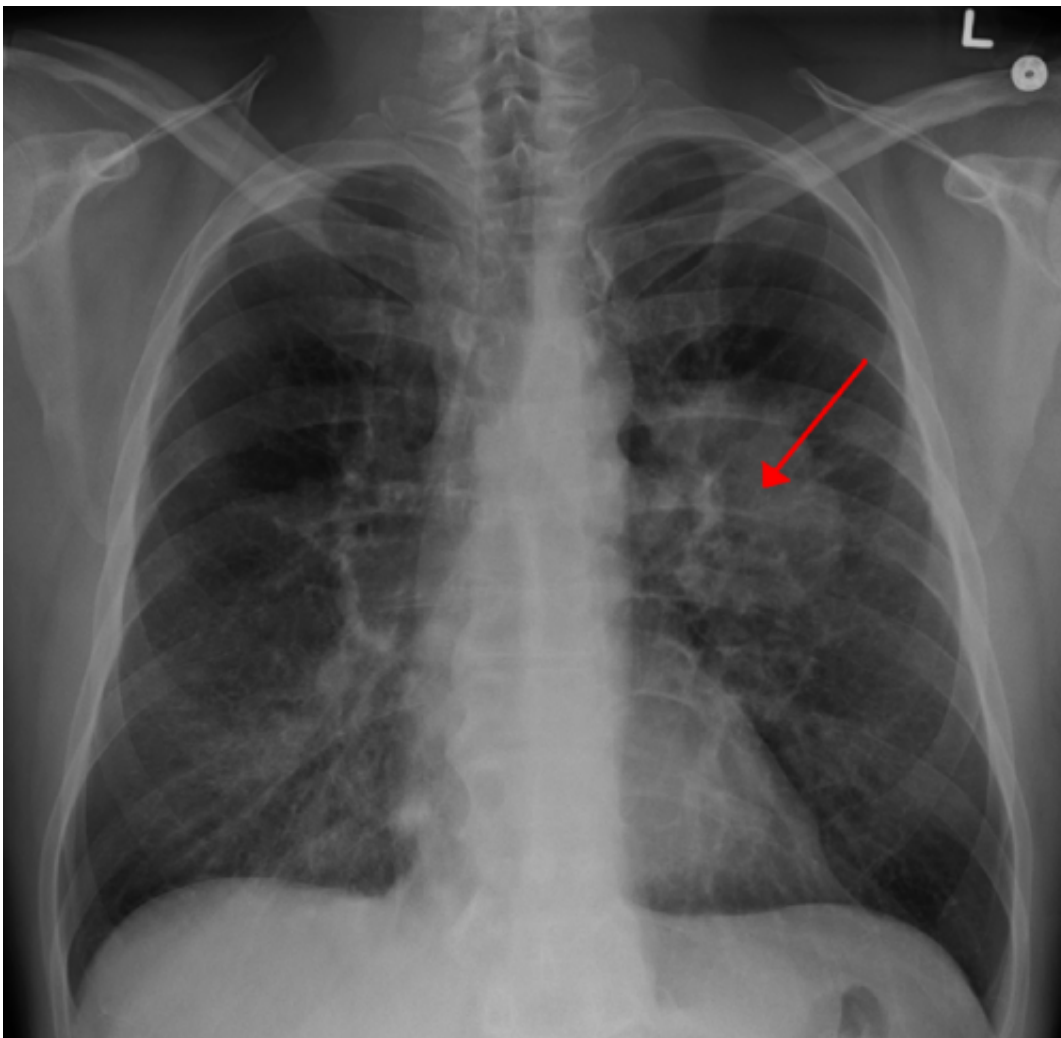


# Radiotherapy for invasive breast cancer increases the risk of second primary lung cancer

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Lung CA seen on CXR. Credit: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/) James Heilman, MD/Wikipedia

East Asian female breast cancer patients receiving radiotherapy have a higher risk of developing second primary lung cancer.

Lung [cancer](#) is the leading cause of cancer deaths worldwide, causing more deaths than breast, colon and prostate cancers combined. The risk factors for developing [lung cancer](#) include tobacco smoking, age, family history, medical or occupational radiation exposure and other chronic inflammatory diseases such as pulmonary fibrosis and chronic obstructive pulmonary disease (COPD). Further, a history of prior cancer such as lymphoma, head and neck cancer or smoking-related cancer is considered to be a risk factor for developing second primary lung cancer (SPLC). Studies have also shown that second primary cancers, specifically esophageal cancer, can develop after receiving radiation therapy for a prior cancer. Interestingly, while radiation exposure is a known risk factor for lung cancer, it is not clear whether treatment with [radiation therapy](#) (RT) for [breast cancer](#) increases the risk of developing SPLC.

Taiwanese researchers conducted a study to evaluate whether [breast cancer patients](#) treated with RT are at greater risk for developing SPLC. The Taiwan Longitudinal Health Insurance Database (LHID), which is randomly abstracted from the National Health Insurance Research Database, was used to collect 986,713 [patients](#) with medical events from 2000 to 2010 for cohort analysis. All women with newly diagnosed [invasive breast cancer](#), aged 18 years or older, and without other types of malignancy before 2000 or in the follow-up periods were enrolled in the study. Eligible patients were assigned to the radiation or non-radiation cohorts. Age, comorbidities, insurance premium, urbanization level, location, date of event and hospital care level were analyzed. Kaplan-Meier curve analysis and the log-rank test were used to demonstrate the cumulative risk for subsequent lung cancer. The hazard ratios of parameters were calculated by Cox regression analysis.

The results of the study published in the *Journal of Thoracic Oncology*, the official journal of the International Association for the Study of Lung Cancer (IASLC), reported that of the 986,713 patients identified in the LHID, 7,408 female patients with breast cancer were eligible for the study. Among these, 5,696 patients underwent radiotherapy and 1,713 did not. At the end of the follow-up period, lung cancer had been diagnosed in 128 patients in the radiotherapy cohort (2.25%) and 4 patients in the non-radiation cohort (0.23%). Cox regression analysis showed that the adjusted hazard ratio was 10.08 times higher in the radiotherapy cohort than in the non-radiation cohort.

The authors comment that, "Treatment choices for breast cancer are multidisciplinary and include a combination of surgical resection, radiation, chemotherapy, hormone therapy and targeted therapy. This study investigated whether radiation, a frequently used therapeutic option for multidisciplinary treatment of breast cancer, subjected patients to a greater risk for SPLC in an East Asian country. The results of this study showed that radiation for breast cancer, which is an important treatment option, was correlated with a significant increase in the incidence of SPLC, particularly among older women or those with advanced-stage breast cancer. Regardless of the clinical or pathological stage, radiation for breast cancer also significantly increased the risk in the non-radiation cohort. Patients who undergo [radiation](#) for multidisciplinary treatment of breast cancer should be carefully monitored to detect potential SPLC."

Provided by International Association for the Study of Lung Cancer

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