Medical Xpress

# Faulty gene could raise vulnerability to asbestos-linked cancer

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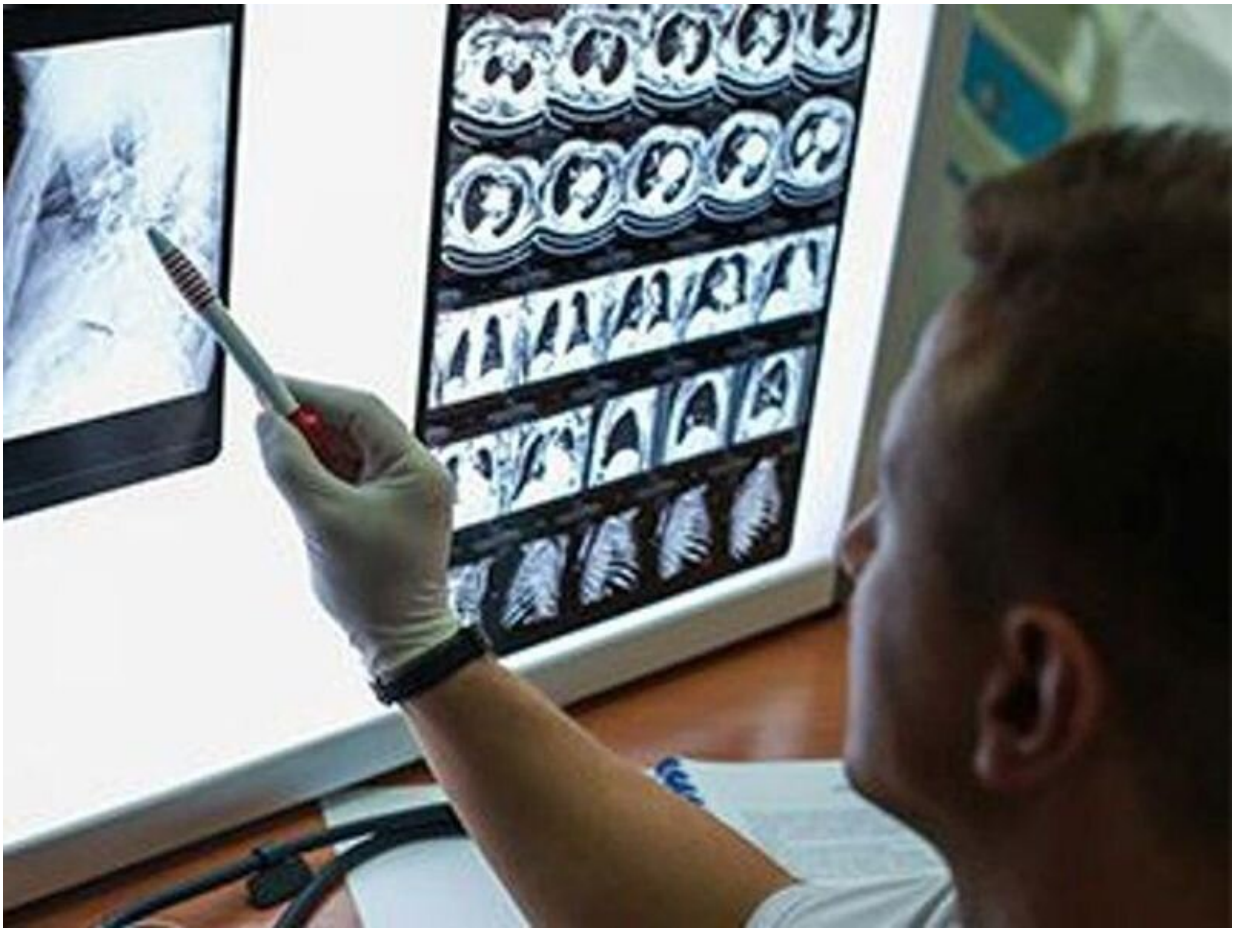

Mutations in a certain gene may increase a person's risk for an

aggressive asbestos-related cancer called malignant mesothelioma, a new study claims.

The gene is called LRRK2 and is involved in regulating responses in immune cells in the brain. Mesothelioma can affect the lungs, stomach or heart.

The small study included 13 malignant mesothelioma patients who were exposed to asbestos and had a family history of cancer, but didn't have a mutation in the BAP1 gene, which is a tumor-suppressor gene that is commonly mutated in familial mesothelioma cases.

Six out of the 13 patients showed one or more mutations in genes other than BAP1.

"We found that most mesothelioma patients from high-risk cancer families have one to four inherited mutations in cancer-related genes that may predispose them to the carcinogenic effects of asbestos," study supervisor Joseph Testa, a professor and senior member of the Cancer Signaling and Epigenetics Program at Fox Chase Cancer Center in Philadelphia.

"Nearly 50% of these mesothelioma patients have bona fide pathogenic mutations that are expected to contribute to disease susceptibility due to their predicted adverse impact on processes such as DNA repair and chromatin modification," Testa added in a Fox Chase news release.

He and his colleagues were "surprised that expression of the LRRK2 gene was lost in 60% of the approximately 30 primary mesothelioma tumors and mesothelioma cell lines that we subsequently examined," Testa said.

"Collectively, our data suggest that in addition to being a cancer

predisposition gene, loss of expression of this newly recognized tumor suppressor gene is a frequent finding in mesothelioma and may serve as a biomarker for identifying those patients most likely to benefit from specific therapies that target pathways affected by LRRK2 loss," Testa said.

The study was published May 19 in the journal *Human Molecular Genetics*.

The next step in this line of research is to investigate how LRRK2 expression decreases in mesothelioma patients and how its loss of function contributes to the development of tumors, the authors explained.

**More information:** The American Cancer Society has more on malignant mesothelioma.



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