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## Virus spread by sex is linked to breast cancer

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HPV, a virus that can be transmitted by sex, may be implicated in breast and a raft of other cancers, according to a series of new research findings.

The virus, already implicated in most cervical cancers, may play a role in a number of other malignancies, and may be involved in a three-fold increase in tonsil cancer.

HPV, or human papilloma virus, has been linked to cancers of the larynx and skin, as well as malignancies of the vulva, vagina, penis, anus and mouth.

In the latest study on breast cancer, researchers found that younger women with breast cancer were more likely to have HPV-positive tissue than older women.

"These data are compatible with the hypothesis that HPV-positive breast cancers occur in younger women than those with HPV-negative breast cancers, and that high-risk HPVs may have been transmitted by sexual activity with HPV-positive sexual partners," they say, in a report in the British Journal of Cancer.

But other experts say much more work is needed: "At present a link with breast cancer would be highly speculative, but worth further investigation," said Professor Alan Rickinson, cancer virus specialist at Birmingham University. "An awful lot of work needs to be done for it to be half convincing and that work has not been done. It seems to me that the virus may well be harmless residents rather than having a causative relationship."

HPV is a family of more than 100 viruses, which are implicated in different diseases. Research in America suggests that HPV is involved in more than 95 per cent of cervical cancers.

In cancer, viruses do not on their own cause disease, but may be a key link in a chain of events, although in some cases it is suspected they actually trigger events.

One theory with breast cancer is that the virus may interact in some way with oestrogen. In the most recent research, a team at the University of New South Wales has reported finding HPV in DNA taken from 50 samples of breast cancer from Australian women. Overall, almost half of the samples were HPV positive.

"HPV may have a role in human breast cancer. We speculate that HPVs may be transmitted by hand from the female perineum to the breast," they said.

A second study found that younger women were more likely to be positive for HPV. They found that the average age of women with HPV-positive breast cancer was 55.6 years compared with 63.8 for women with HPV-negative breast cancer.

Again, the researchers are cautious and say further investigation is needed. "The strength of the link between HPVs and breast cancer is substantial but not conclusive," said Professor Jim Lawson, who led the study.

HPV is being found increasingly in other cancer tissue. Researchers at the Karolinska Institutet in Stockholm said the virus is

found in sizeable proportions of tonsillar cancer.

They have shown that the incidence of tonsil cancer in Sweden increased 2.8-fold between 1970 to 2002, and that over the same period there was a similar increase in the proportion of HPV-positive tonsillar cancer cases.

"We have demonstrated a highly significant and parallel increase both in the incidence of tonsillar cancer and the proportion of HPV-positive tumours. Hence, HPV may play an important role for the increased incidence of tonsillar cancer. This should definitely influence future preventive strategies as well as treatment for this type of cancer," they say.

At the University Hospitals, Liverpool, researchers have reported the discovery of HPV in oesophageal cancers: "This is the first report of both HPV-5 and HPV-16 DNA detected in an oesophageal cancer occurring in the Western population."

A team from Memorial Hospital in Taiwan have found the virus in other cancers too: "Results strongly suggest that HPV may play a major role in the carcinogenesis of urogenital and perianal tumors."

Researchers at Kagoshima University in Japan examined 36 lung cancers and found the presence of HPV in 28 per cent of the cases.

A report on HPV from the International Agency for Research on Cancer says that one HPV virus is associated with a number of cancers.

"For human papilloma virus 16, data show a causal role in cancer of the vulva, vagina, penis, anus, oral cavity, and oropharynx, and some association with cancer of the larynx and periungual skin," it says.

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