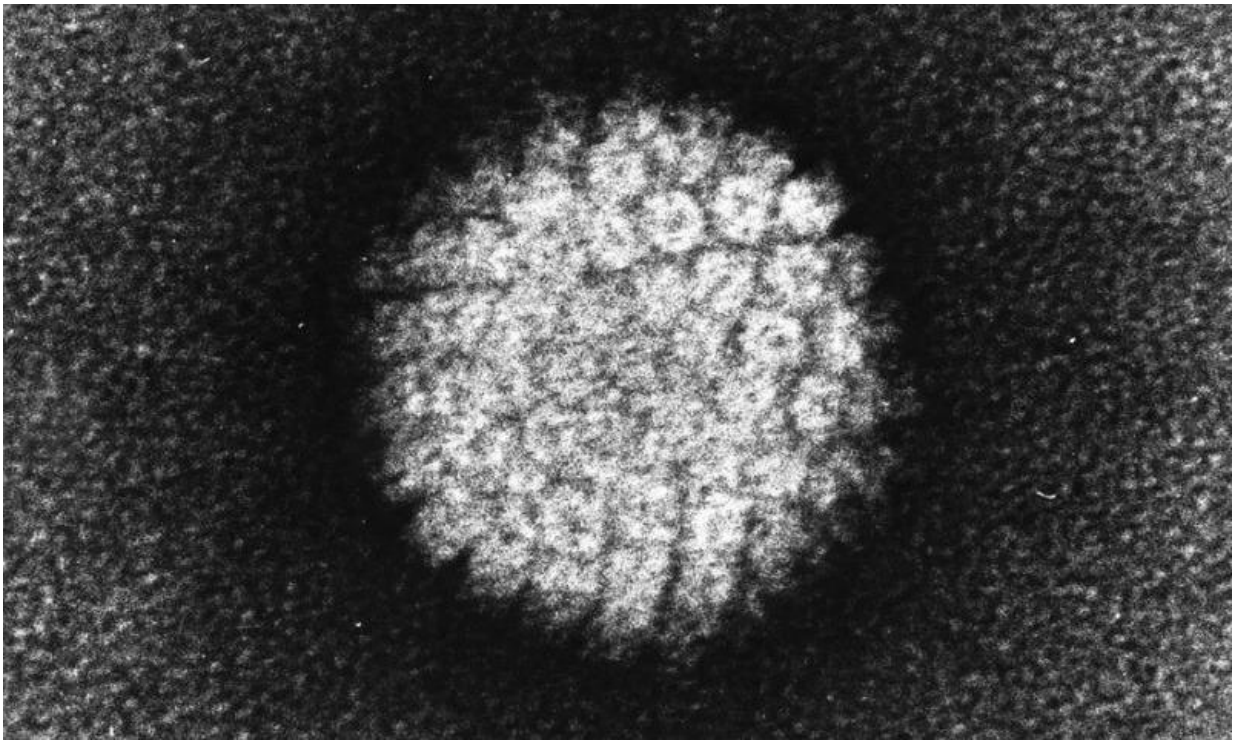
Researchers show beta-cutaneous HPV may be predictor of squamous cell carcinoma

August 3 2021



Electron micrograph of a negatively stained human papilloma virus (HPV) which occurs in human warts. Credit: public domain

Keratinocyte carcinomas, including basal cell and squamous cell carcinomas, are the most common types of cancer in the United States, with approximately 5.4 million cases diagnosed each year. Despite their low mortality rate, keratinocyte carcinomas are associated with

significant medical problems caused by treatment and health care costs. Therefore, new biomarkers are needed to aid in identifying patients at risk of developing keratinocyte carcinomas. In a new article published online ahead of print in the journal *Cancer Research*, Moffitt Cancer Center researchers demonstrate a link between the presence of cutaneous human papillomavirus and the incidence of squamous cell carcinomas and identify key characteristics of infection that may contribute to development of the disease.

The identification of biomarkers that are associated with the development of keratinocyte carcinomas is an important component of disease management. This can pinpoint patients who may be at a higher risk of cancer and help promote individualized prevention strategies, such as more frequent or specialized skin cancer screenings. Previous studies have suggested that infections with cutaneous HPV may also be associated with keratinocyte carcinoma development; however, these studies had several limitations and were not conclusive.

"Unlike mucosal HPV types known to cause cervical, head and neck and anogenital cancers, the role of cutaneous HPV types in the development of cancer is less clear," said Dana Rollison, Ph.D., lead study investigator and associate center director of Data Science at Moffitt.

Moffitt researchers wanted to analyze the potential contribution of cutaneous HPV to keratinocyte carcinoma development. They looked at biomarkers of past and recent infection with cutaneous HPV beta and gamma types, as well as recent ultraviolet light exposure.

The researchers recruited 1,008 participants age 60 or older. The participants had blood, eyebrow hair and forearm skin swabs taken and analyzed for the presence of cutaneous HPV. The patients underwent total body skin examinations every six to 12 months and were monitored for a median of 792 days for the development of new basal cell and

squamous cell carcinomas.

The results showed that the presence of beta-HPV at baseline, particularly in the skin swabs, significantly predicted the development of squamous cell carcinomas; however, the presence of antibodies to beta-HPV, which indicates past HPV infections, was not associated with squamous cell carcinomas. Interestingly, the researchers found that most of the beta-HPV types found in the skin swabs were not present in the squamous cell carcinoma tumors that eventually developed. Additionally, they discovered that less than 5% of squamous cell carcinoma tumors contained beta-HPV types, but those that contained beta-HPV occurred more frequently in areas of UV skin damage compared to squamous cell carcinoma tumors without beta-HPV, suggesting that UV exposure and HPV may act in a cooperative manner to promote squamous cell carcinoma development. The researchers did not find any links between beta-HPV and the development of basal cell carcinomas or between gamma-HPV and the development of squamous cell or basal cell carcinomas.

These combined observations suggest that beta-HPV could ultimately prove to be a useful biomarker to help identify people at an increased risk of developing cutaneous squamous cell carcinomas.

More information: Dana E. Rollison et al, Cutaneous human papillomaviruses and the risk of keratinocyte carcinomas, *Cancer Research* (2021). DOI: 10.1158/0008-5472.CAN-21-0805

Provided by H. Lee Moffitt Cancer Center & Research Institute

cutaneous-hpv-predictor-squamous-cell.html