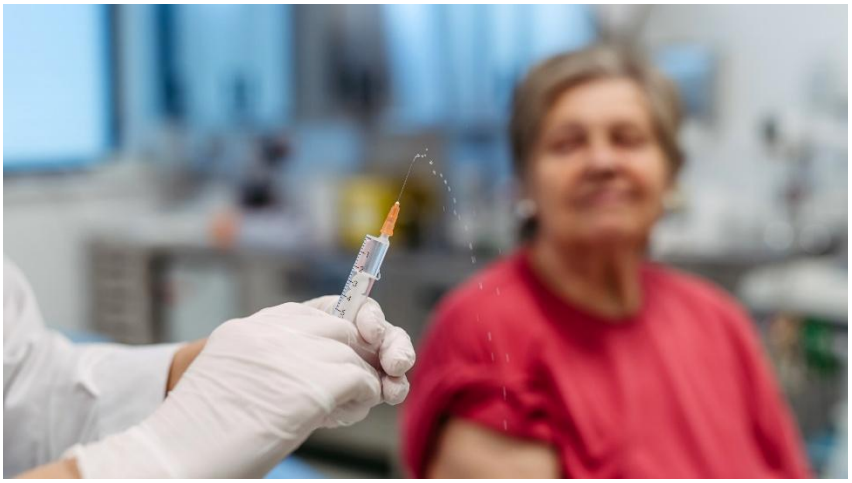
An Unexpected Heart Health Pattern Revealed by Shingles Vaccines when US Switch it

A recent study published explored the association between recombinant herpes zoster (shingles) vaccination and cardiovascular disease (CVD) burden in the United States (US). They found a significantly lower CVD burden among those who predominantly received the recombinant shingles vaccine, including ischemic heart disease (IHD), heart failure, and atrial fibrillation. While lower cardiovascular burden was observed in both men and women following vaccination, ischemic stroke was not significantly lower overall, although men showed a 12% lower burden. The findings support mechanistic studies and clinical trials investigating potential cardiovascular benefits of shingles vaccination.

Shingles vaccination is recommended for older adults to help protect against varicella-zoster virus (VZV) reactivation and the infections it can cause. Previous studies suggest that shingles vaccination may also lower CVD risk. However, most studies compared vaccinated and unvaccinated individuals. Such comparisons may be influenced by differences in health-related and other characteristics among vaccine recipients and non-recipients.



Study

In the present study, researchers analyzed EHR data from the TriNetX US Collaborative Network, which contains records for over 100 million individuals across approximately 60 healthcare organizations (HCOs). The primary analysis compared two propensity score-matched cohorts of 36,460 adults each, with cardiovascular outcomes assessed for up to seven years after vaccination. Drawing upon demographic, diagnosis, and medication-related data, they developed a composite CVD outcome measure, including ischemic stroke, IHD, or heart failure, among two groups of US adults aged at least 60 years.

The study included people vaccinated during the six months before the transition to the recombinant shingles vaccine, when the live attenuated vaccine predominated (April 1 to September 30, 2017). A separate group comprised those vaccinated one year later, during a similar time period, when recombinant vaccine use was predominant. In the respective periods, 98.6% received the live vaccine, and 93.5% received the recombinant vaccine.

None of the participants had been diagnosed with immune deficiencies or hematological malignancies on or before their initial shingles vaccination. In addition, none received

immunosuppressants, corticosteroids, chemotherapy, or radiation oncology treatment in the year before their first shingles vaccination.

For diagnoses, the researchers relied on the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes. Laboratory measurements were identified using Logical Observation Identifiers Names and Codes (LOINC). The team also used the ICD-10 Procedure Coding System (ICD-10-PCS) and Current Procedural Terminology (CPT) codes to determine which procedures participants underwent.

The researchers performed propensity score matching (PSM) to adjust for variations in vaccinated population characteristics. Based on the restricted mean time lost (RMTL) ratio, which reflects time lived with an outcome during follow-up, they evaluated the association between recombinant vaccination and CVD burden and stratified the results by sex. They additionally compared cardiovascular outcomes after shingles vaccination with those following tetanus, diphtheria, and acellular pertussis (TDaP) and influenza vaccines in secondary analyses.

Findings and Discussion

The cohort predominantly receiving recombinant shingles vaccination was linked to a 9.0% lower overall CVD burden during the seven-year follow-up, although the association weakened over time. While heart failure and IHD burdens were reduced by 12% and 10%, respectively, across sexes, ischemic stroke was not significantly lower overall but was 12% lower among men. Atrial fibrillation burden was also 7.0% lower in the predominantly recombinant-vaccine group, with an RMTL ratio of 0.93. No significant associations were observed for myocarditis, peripheral arterial disease, hemorrhagic stroke, or transient ischemic attack.

The associations between vaccination and lower CVD burden were broadly consistent when the analysis excluded the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic period and when death was included in the composite outcome or non-cardiovascular death was treated as a competing risk. In addition, the results remained largely unchanged after matching follow-up periods, varying the time frames used to define covariates, and testing secular trends using TDaP recipients. Secondary comparisons with TDaP or influenza vaccination also favored recombinant shingles vaccination, although the authors noted that these conventional matched-cohort comparisons were more prone to bias.

During the 12 months before shingles vaccination, the study groups showed largely similar use of preventive healthcare services and CVD risk. Selected preventive healthcare indicators were also similar between the cohorts during follow-up, including bowel cancer screening, antihypertensive prescriptions, and general preventive medicine services. The inverse associations were strongest for heart failure and IHD during the initial follow-up years and weakened thereafter.

The observed cardiovascular pattern may arise from changes in endothelial and immune function. The AS01 adjuvant in the vaccine may also induce sustained epigenetic and functional reprogramming of monocytes, including reduced interleukin-6 (IL-6) responses to Toll-like receptor activation, potentially lowering CVD risk. However, these immune effects may be temporary, which could explain the weaker associations later in follow-up.

Although the natural-experiment design reduces biases affecting conventional observational studies, it does not establish causality. Residual confounding from unmeasured socioeconomic and lifestyle factors, including smoking, diet, alcohol use, education, occupation, and income, cannot be excluded, and outcomes were based on recorded EHR diagnoses.

Conclusion

The study findings suggest that recombinant shingles vaccination is associated with a lower CVD burden than the live-attenuated vaccine among older adults aged ≥60 years. If future clinical trials confirm these findings, recombinant shingles vaccination could prevent a considerable number of CVD cases in the US and potentially help reduce the global burden of cardiovascular disease. Future studies should explore biological mechanisms underlying these protective associations. Researchers could evaluate the effects of repeated vaccination at regular intervals and incorporate more lifestyle and socioeconomic factors, such as diet, smoking, alcohol intake, education, occupation, and income, given the attenuation of the results over time.

Source:

https://www.news-medical.net/news/20260827/The-US-switch-in-shingles-vaccines-revealed-an-unexpected-heart-health-pattern.aspx