HPV Vaccine May Increase Risk of Several Autoimmune Diseases: Study

Girls who received the quadrivalent HPV vaccine had 4.4 times the risk of developing rheumatoid arthritis and 2.9 times the risk of thyrotoxicosis.

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A new study suggests the quadrivalent vaccine against human papillomavirus (qHPV) may increase the risk of developing several autoimmune diseases.

A retrospective cohort study published on March 7 in Vaccine found that adolescent women who were vaccinated were 4.4 times more likely to develop rheumatoid arthritis than those who were not vaccinated. Similarly, vaccinated adolescent women had a 2.76 times higher chance of

developing juvenile idiopathic arthritis.

The study found that females who received the qHPV vaccine had a 2.86 times higher risk of developing thyrotoxicosis, while the risk of developing idiopathic thrombocytopenic purpura (ITP) was 2.54 times higher in the vaccinated group. Thyrotoxicosis causes inappropriately high levels of circulating thyroid hormone, and ITP is a blood disorder characterized by an abnormal decrease in blood platelets.

Study Details

To carry out their study, researchers used national vaccination records in Colombia and diseases of special interest diagnostic data from 2012 to 2021 to evaluate the safety profile of the quadrivalent HPV vaccine. The data included 1,953,196 adolescent females between 9 and 19 years old in their analysis, as this is the target population for HPV vaccination.

All records contained at least one record or ICD-10 code associated with 33 autoimmune, neurological, and hematological diseases suspected to be associated with the qHPV vaccine and three diseases without relation to the vaccine.

Out of the 36 diseases, researchers chose 16 that were more frequently associated with the qHPV vaccine. They then compared vaccinated and unvaccinated cohorts and established a follow-up period of 180 and 360 days after vaccination based on when an acute event could be plausibly related to vaccination and the corresponding time periods reported in the literature.

For the first dose analysis, researchers compared a sample of 55,114 females who received at least one dose of a qHPV vaccine during the study period with 370,800 unvaccinated adolescents who had no record of HPV vaccination.

For the second dose analysis, researchers compared 35,801 females who received at least two doses of a qHPV vaccine with 370,793 unvaccinated adolescents.

After excluding six diseases that did not have a minimum number of incident cases in each cohort necessary to assess a causal effect, researchers were left with 10 diseases including rheumatoid arthritis, juvenile idiopathic arthritis, systemic lupus erythematosus, Bell's palsy, idiopathic thrombocytopenic purpura, thyrotoxicosis or Graves' disease, Hashimoto's thyroiditis, other hyperthyroidisms, hypothyroidism, and Type 1 diabetes.

Researchers then evaluated the causal relationship between the 10 remaining diseases and analyzed them based on the number of doses received and the follow-up periods. For vaccinated individuals who received more than one dose, researchers used an observational period of 2,000 days to ensure they captured all individuals with a completed vaccination schedule.

The results showed that qHPV vaccination affected the development of four diseases, including rheumatoid arthritis, juvenile idiopathic arthritis, thrombocytopenic purpura, and thyrotoxicosis. However, the researchers said their results should be interpreted with caution, as further study is needed, and these diseases could occur in the same population without vaccination.

According to the paper, the HPV vaccine is one of the most studied vaccines in the history of vaccination for adolescents, and it is touted as safe and effective. Yet, local studies supporting this claim are lacking, which could explain low vaccination rates, researchers wrote.