# Vaccines linked to mental disorders by Yale study

KEVIN WANG | 1:18 AM, FEB 21, 2017

STAFF REPORTER

A recent Yale study has called into question the safety of vaccines and could lend fuel to anti-vaccine advocates like Robert F. Kennedy Jr., who has already written a piece covering the study on the news site EcoWatch.

The study, published last month in the journal Frontiers in Psychiatry, reports that patients diagnosed with neuropsychiatric disorders like obsessive-compulsive disorder and anorexia nervosa were more likely to have received vaccinations three months prior to their diagnoses. Though the collaboration between researchers at Pennsylvania State University and the Yale Child Study Center yielded results that seem to dispute the safety of vaccines, the authors asserted that the study needs replication on a larger scale and does not establish a causal relationship between vaccines and neuropsychiatric disorders.

“There’s a fair amount of interest in the vaccine safety question, so let’s try to be critical and do further studies that will help examine this issue in a more thorough way,” said James Leckman, professor of pediatrics and one of the study’s five authors.

Using information from a health insurance claims database, Leckman and his co-authors examined the correlations between specific vaccines and various neurological disorders in six- to 15-year-old children. Children with open wounds and broken bones were used as the two control groups.

While only about 10 percent of children with open wounds had received vaccinations, vaccines had been given to over 20 percent of children later diagnosed with anorexia. Higher numbers of vaccinated children were also found among those who were diagnosed with OCD, anxiety disorder and ADHD as soon as three months after their vaccinations.

Other findings in the study, however, reveal that these correlational results should be taken with a grain of salt.

The broken bone control group also included a higher percentage of vaccinated children, though not as high as that of the anorexia group. Furthermore, vaccinations were more likely to be associated with a lower incidence of major depression and bipolar disorder.

The researchers found correlations for one vaccine in particular: the influenza vaccine, which was associated with higher rates of OCD, anorexia, anxiety disorder and tic disorder.

A biological explanation for these correlations has not been found, but a potential mechanism could lie in the body's immune response to vaccines, the study suggested.

Vaccines work by prodding the immune system to produce antibodies against viruses and bacteria, thus priming the body against these pathogens before they enter it. Some antibodies, however, can react against not only the intended pathogen proteins, but also against human proteins — a phenomenon called cross-reactivity. A 2015 study published in Science Translational Medicine discovered that antibodies elicited by the Pandemrix influenza vaccine cross-reacted with a human brain protein — hypocretin receptor 2.

Autoimmunity, in which antibodies attack human proteins, is also known to play a critical role in normal brain development, Leckman noted. According to Leckman, if children were experiencing inflammation — a process that promotes autoimmunity — at the time of vaccination, the combination of inflammation and vaccination could have deleterious effects on brain development. Such data on vaccination timing was not included in the database on which the study was based.

Another biological explanation could involve genetic factors, Leckman said. Prior studies in Scandinavian countries and China found that the H1N1 influenza vaccine was associated with narcolepsy. The influence of multiple genes found in specific populations could be responsible, he added.

Yale professor of pathology John Rose suggested that the act of vaccine administration, rather than the vaccine itself, could even have an effect on neuropsychiatric development, recalling his childhood experience of being one of the first children to receive the polio vaccine.

"We had to line up in school, and we were getting needles stuck in our arms," Rose said. "That kind of trauma could be leading to these kinds of neuropsychiatric disease. The age range of the children in the study is quite sensitive."

Rose, who developed a vaccine template that was used for the development of the current Ebola vaccine, said he trusts the current process of drug development to establish safety measures for vaccines. On average, a vaccine takes 15–20 years to be fully approved, Rose said.

Leckman said the accuracy of the diagnoses reported by the administrative database could also be questioned.

John Treanor, chief of infectious diseases at the University of Rochester Medical Center, voiced concerns about the database, citing issues of immeasurable confounding variables and the extent to which the control groups actually serve as effective controls. Nevertheless, he emphasized the importance of vaccine safety and further research to understand it.

Rose expressed concern that the study would “activate anti-vaccine people in a very serious way” and agreed with the study’s assertion that the results are very preliminary and do not establish a cause and effect relationship. Animal models, Leckman noted, could help establish such a cause and effect relationship by allowing researchers to manipulate and control for multiple variables.

Even the authors noted that the results of the study are too inconclusive to warrant any reconfiguration of public health strategies.

“Given the modest magnitude of these findings in contrast to the clear public health benefits of the timely administration of vaccines in preventing mortality and morbidity in childhood infectious diseases, we encourage families to maintain vaccination schedules according to [the Centers for Disease Control and Prevention] guidelines,” they wrote in the study.

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