

ALLERGY (ASTHMA) TO MONKEY PROTEIN IN POLIOMYELITIS VACCINE

SEYMOUR B. CREPEA, M.D., MADISON, WIS.

ALLERGIC reactions to heterologous animal proteins commonly occur when these proteins are injected into human beings. In many instances the antigen is the major or active agent, as when antitoxins are used in passive immunity. Less frequently, the animal protein is a contaminating element in a vaccine and has nothing to do with the major function of the vaccine. Thus, in the case of vaccines made from egg-grown viruses, serious allergic reaction may occur as a result of minor quantities of residual egg albumin.¹

Presently the Salk poliomyelitis vaccine is being used on a very large scale. This vaccine is prepared by growing the virus in monkey kidney cells grown in an artificial nutrient substrate. Virus removed from cultures carries with it small amounts of monkey tissue protein, together with whatever protein was used as part of the nutrient substrate.² In the brief span of the clinical use of this vaccine, no reaction to this monkey protein factor has been reported; therefore, this rather unusual instance is described.

CASE REPORT

C. D., a 9-year-old boy whose parents were Rh positive and whose father had asthma, was receiving care in the allergy clinic for an inhalant form of allergic rhinitis and asthma. His allergy background dated to the age of 4, when his parents noted that severe conjunctivitis, rhinitis, and asthma occurred in various animal houses at the zoo. Especially marked was the reaction noted in the monkey house. Because of this reaction, zoo contacts were limited. Pollen asthma subsequently developed, and for this he was brought to the clinic in October, 1954. In November, 1955, he was given 1 c.c. of poliomyelitis vaccine by his family physician. That night asthma of moderate severity developed, along with a stuffy nose. The arm was not swollen. The asthma lasted one day and subsided. One month later a second dose of 1 c.c. of vaccine was administered. Asthma and rhinitis developed in a few hours, and this time they lasted for three days. Again local reaction was minimal. On several occasions before and since these reactions to Salk vaccine oral penicillin, 1,000,000 units per day for periods as long as seven days, was given with no untoward response.

The boy was scratch tested with a 1:10 dilution of poliomyelitis vaccine and gave an immediate wheal and flare reaction. A control test on a normal subject was negative. An intradermal test with *Macaca rhesus* serum diluted 1:5,000 gave a marked immediate reaction, whereas similar testing with horse serum 1:100 produced but a slight reaction.

DISCUSSION

Allergic reactions to antigenic materials which are not pharmacologically essential constituents of a drug have been reported previously.¹ Essentially,

From the Department of Medicine, University of Wisconsin Medical School.
Received for publication Jan. 14, 1957.

such items are present in only small amounts; however, in highly allergic persons, even then serious reactions can occur. Requirements for commercial vaccine are such that antigenic sera added to a virus-monkey cell mixture as part of the nutrient substrate shall not exceed 1:1,000,000 in the final product.³ This material (not necessarily monkey serum), plus monkey cell material carried over into the vaccine, constitutes the antigen presumably involved in the present report.

Our review would suggest that here we had an allergic child who developed a high degree of allergy to the monkey, presumably as a result of zoo exposures. Five years later the injection of poliomyelitis vaccine containing small amounts of monkey protein caused an allergic response.

SUMMARY

A rather unusual case of allergy (asthma), presumably caused by minute amounts of monkey protein contained in Salk vaccine, is presented. This situation will probably be seen only rarely, but the possibility of similar reactions, particularly with repeated injections of the vaccine, must be borne in mind.

REFERENCES

1. Plotz, H., Coulson, E. J., Stevens, H., and Stull, A.: *J. Immunol.* **53**: 315, 1946.
2. Public Health Service Technical Report on Salk Poliomyelitis Vaccine, U. S. Department of Health, Education and Welfare, June, 1955, p. 30.
3. *Ibid.*: Appendix E.