

Tetanus Immune Status of Adult Patients in an Urban Family Practice

Shelly Pai, MD, Bruce M. Romanic, MD, Adamadia Deforest, PhD, and Dene T. Walters, MD
Wilmington, Delaware, and Philadelphia, Pennsylvania

Tetanus is a disease that should be on its way to extinction, as it can almost absolutely be prevented. For this reason it has been referred to as an "inexcusable disease."¹ This preventive capability has largely been developed during the lifetime of most residents now in family practice programs.

In 1957, 450 cases of tetanus were reported in the United States, but since 1976 the annual number of reported cases has been stable at between 86 and 89. In 1982 more than 60 percent of patients with tetanus were over 60 years of age.²

The prescription of correct tetanus prophylaxis in the adult patient depends in part on the patient's history. Generalization regarding proper treatment of the injured patient is not possible for several reasons, including the wide variation in tetanus immune status with respect to geography and age.²⁻⁶

Because the patient's history of immunization against tetanus is so important when objective evidence is lacking, it seemed of interest to attempt to define the tetanus immune status of patients lacking adequate documentation. The patients' perceptions of their tetanus immune status could then be compared with their corresponding antitetanus antibody levels.

METHODS

All patients coming to the Family Practice Office with regularly scheduled appointments were asked two questions: (1) Have you ever had a tetanus shot? and (2) When was your last booster? All patients aged 20 years and younger, pregnant, or with documentation of their tetanus immunizations were excluded from the study. After obtaining informed consent from each person in the study, serum samples were obtained for antitetanus antibody titers.

The antibody titers were performed at St. Christopher's Hospital for Children, Philadelphia, using a hemagglutination assay technique. An antibody titer level of greater than 0.01 μmL was considered to confer adequate tetanus immunity.⁷

The data obtained were analyzed using either the Student's *t* test for small sample size, the chi-square statistic, or the Yates' corrected chi-square statistic when the degree of freedom of the contingency table equaled 1.

RESULTS

One hundred three patients were included in the study. The age range of the study participants was 21 to 91 years, which included 32 male (31 percent) and 71 female (69 percent) participants. This gender distribution closely parallels reported family practice ambulatory patient populations.⁸

Actual antibody titers revealed that 98 patients (95 percent) had immune levels of antitetanus antibodies. The five study participants found to be nonimmune were all women aged 34 to 60 years. There was, how-

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From the Family Practice Residency Program, Medical Center of Delaware, Wilmington, Delaware, and the Department of Pediatrics, St. Christopher's Hospital for Children, Philadelphia, Pennsylvania. At the time this paper was written, Drs. Shelly Pai and Bruce M. Romanic were residents in Family Practice, Medical Center of Delaware, Wilmington, Delaware. Requests for reprints should be addressed to Dr. Dene T. Walters, Medical Center of Delaware, Family Practice Office, 1401 Washington Street, Wilmington, DE 19899.

ever, no association between gender, age, or question response and immune status.

Only 82 patients (80 percent) recalled ever having had a tetanus shot, and only 25 patients (24 percent) claimed adequate immunization, defined as having had a booster less than ten years ago.

Participants aged 50 years and older had lower antitetanus antibody titers (mean, $0.7 \mu\text{mL}$) than those younger than 50 years (mean, $4.0 \mu\text{mL}$), a significant difference ($P = .0005$). The number of participants in the 50-year and older group ($n = 51$) was comparable to the number in the younger than 50-year group ($n = 52$).

In the process of analyzing the question responses for bias, no difference between question response and age category was noted. A difference between the male and female participant responses was noted, however. Men were less likely to answer "don't know" to either question ($P = .04$). No other combination of question responses showed significant gender differences.

COMMENT

This study was undertaken to answer two questions concerning the Family Practice Office patient population. First, what is the patient's perception of their tetanus immune status when adequate documentation is lacking, and second, how is this perception of their tetanus immune status related to actual antitetanus antibody levels?

In this study tetanus immunity did not correlate with patients' perception of their immune status. In fact, 95 percent of patients possessed adequate tetanus immunity, but only 24 percent were aware of adequate immunization. Although the 95 percent immune rate is greater than has been reported from other regions,²⁻⁶ one can readily see how many patients visiting a hospital emergency room may be overtreated for tetanus prophylaxis.⁹

No correlation could be found with gender, age, or question response and level of immunity. Only the absolute antibody titers showed a significant inverse relationship with age, perhaps reflecting the effect of increasing age on the ability to maintain an immune response. This decreased level of antitetanus antibody correlates with a recent report indicating that patients aged over 50 years constitute a high-risk group for tetanus.¹⁰

It appears that most of the adult patients in this practice are adequately immunized against tetanus. This serves to remind one that keeping patients informed of their tetanus immune status is also an important responsibility.

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