TBE NEWS

10-YEAR BOOSTER INTERVAL OF TBE VACCINE: HOW EFFECTIVE IS IT?

Introduction

In Europe, two TBE vaccines are currently licensed, FSME Immun (based on strain Neudörfl) and Encepur (based on strain K23). The primary vaccination series for both vaccines consist of three doses given at day 0, 1–3 months and 5–12 months, with booster doses every 3 to 5 years (dependent on age of the vaccinee, vaccine formulation and country recommendation). When this immunization schedule is followed, a vaccine effectiveness (VE) of about 95% has been measured.

There are a couple of studies showing that the level of neutralizing antibodies persists for more than five years in most of the vaccinees. In 2006, the Swiss Federal Office of Public Health changed the recommendations for booster intervals and approved a booster interval of 10 years. Now, a retrospective case-control study to evaluate TBE VE in Switzerland has been conducted at <5, 5–10 and 10+ years post-vaccination.

Results

In this retrospective study, the total number of TBE vaccine doses received was determined for cases and controls. Individuals were classified as "unvaccinated", when they had received no dose (0) of vaccine, "incomplete" after having received 1–2 doses, and "complete" after 3 or more doses (3+).

In total, 1828 cases and 3667 controls were matched for this study. Among cases, 8.3% (N=151) had received at least one TBE vaccine dose compared to 45.2% (N=1656) of controls. Of vaccinated cases, 49.7% were "incomplete" and 50.3% were "complete". Of vaccinated controls, 16.8% were "incomplete" and 83.2% were "complete".

For "complete" vaccination, VE was 95.0%, while for "incomplete" vaccination, VE was 76.8%. VE was 91.6%, when the most recent dose was received <5 years. A VE of 95.2% was calculated when the most recent dose was given 5–10 years and VE was 98.5% when the last dose was given 10+ years. These numbers were comparable between age groups of 18–39, 40–59 and 60–79 years of age.

For completely vaccinated cases, median time since last vaccination was 3.8 years compared to 7.8 years for controls. A total of 63.2% of cases had received their last vaccination within the preceding 5 years, 26.3% between 5–10 years and 10.5% more than 10 years. For controls, the numbers were 38.0%, 28.8% and 33.3% for <5, 5–10 and 10+ years, respectively.

Discussion

In this study, a VE of 95% has been calculated for completely vaccinated individuals and 69.0% to 82.6% for incomplete vaccination, which was substantially and significantly less for those with a complete vaccination. VE did not decrease in individuals with increasing time after the last vaccine dose. The median time to vaccine failure did not differ between cases having received three doses or having received more than four doses, suggesting no impact of adding an additional vaccine dose.

In summary, these findings do not indicate a consistent decrease in TBE VE over time among fully vaccinated individuals and support the effectiveness of 10-year TBE booster intervals currently used in Switzerland.

In this context, it is of interest that the Robert Koch-Institute (Berlin) has recently stated, "the VE is 97% after basic immunization and according to studies, the protection is still very good 5–10 years after basic immunization" (www.rki.de/impfen-faktenblaetter).

Literature

Zens et al.

Retrospective, matched case-control analysis of tickborne encephalitis vaccine effectiveness by booster interval, Switzerland 2006-2020

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