Efficacy of Tetravalent Dengue Vaccine – A Meta-analysis

Agnibho Mondal[1], Bishal Gupta[2] and Rama Prosad Goswami[1]

[1]Department of Tropical Medicine, School of Tropical Medicine, Kolkata
[2]Department of Microbiology, School of Tropical Medicine, Kolkata

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Abstract

Objective A tetravalent dengue vaccine (CYD-TDV) has been licensed in 2015 and is currently approved in 20 countries. We did a meta-analysis to determine whether CYD-TDV is effective in preventing dengue.

Methods We did a pubmed search to find published papers on dengue vaccine (keyword: dengue AND vaccine AND randomized controlled trial [pt]) and found 74 results. We filtered those papers first by titles, then abstracts and lastly by full text and included 6 studies which compared CYD-TDV with placebo. We used virologically confirmed dengue as our primary endpoint. We combined data for all age groups together. We used RevMan software for statistical analysis.

Results We included 6 studies which had 122,660 participants in total, 82165 in vaccine group and 40495 in control group. Virologically confirmed dengue occurrence was 865 in vaccine group and 1087 in control group. Fixed effect model was used and the heterogeneity was I^2=81%. Confidence interval was chosen as 95%. Overall effect was Z=20.69 (P<0.000001). The meta-analysis showed a risk ratio of 0.39 in favor of the tetravalent dengue vaccine.

Conclusion The meta-analysis showed a lower incidence of virologically confirmed dengue in the vaccine group which indicates that CYD-TDV vaccine is efficacious in preventing dengue. However, our study did not look into different age-groups separately. Not all studies looked into the severity of dengue in vaccine group. Most studies were in dengue endemic regions. A single large study in 2017 dominated the meta-analysis.

Based on the current meta-analysis it can be said that tetravalent dengue vaccine is effective in preventing dengue and should be considered for implementation in endemic regions. Further meta-analysis may be warranted to look into dengue vaccine efficacy in specific age groups.

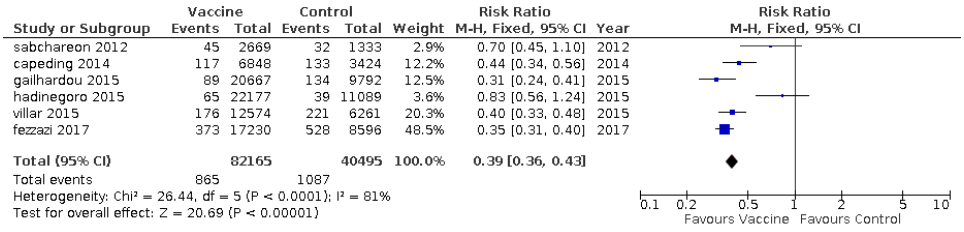

Figure 1: Forest plot