P0381 Characterisation of humoral immunity for tick-borne encephalitis vaccination in allogeneic blood and marrow graft recipients: a pilot study

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Background: In Austria tick-borne encephalitis (TBE) is the most common viral disease transmitted by infected ticks. The aim of the present prospective single-center study was to characterize the humoral immune response following a basic immunization with TBE-vaccine among patients after allogeneic hematopoietic stem cell transplantation (HSCT) compared to healthy volunteers without previous TBE-vaccination.

Materials/methods: From July 2014 to January 2018, 19 adult patients 11 to 13 months after HSCT and 15 unvaccinated healthy adults were recruited at the Medical University of Vienna. Each participant received up to three TBE-vaccinations with antibodies being measured by neutralization test (NT) at baseline, 4 weeks after 2nd and 4 weeks after 3rd vaccination. As primary endpoint, the titer response defined as NT ≥1:10 and at least a 2-fold increase from baseline four weeks after 2nd vaccination was compared between HSCT patients and healthy controls using Fisher’s exact test. This study was funded by a grant of the Austrian Science Fund (KLI 372) and was additionally supported by a grant of Pfizer.

Results: Prior first TBE vaccination, 15 of 19 (78.9%) HSCT patients (median age 31 years) still had neutralizing antibodies against TBE virus (NT ≥1:10), whereas all 15 unvaccinated controls (median age 30 years) did not have any detectable NT-titers. Four weeks after 2nd vaccination, we found a statistically significantly reduced antibody response in HSCT patients (35.3% titer response among 17 patients versus 93.3% titer response among 15 controls; p<0.001). In the logistic regression analysis, a normal T-cell reconstitution at baseline (odds ratio (OR) 8.9, p=0.03), meaning CD4+ and CD8+ count in normal range, and the absolute CD4+ count at baseline (OR 1.01, p=0.02) were significantly associated with titer response. Also female gender (OR 6.8, p=0.06) and having a related donor (OR 6.1, p=0.08) showed a positive trend towards a titer response.

Conclusions: Overall, patients one year after HSCT showed a significantly reduced response to TBE vaccination compared to healthy controls. Interestingly, the majority retained detectable NT-titers one year after allogeneic HSCT. Determining CD4-counts prior vaccination could improve the selection of those HSCT-patients who are capable of responding to TBE vaccination.