P1584 CELLULAR IMMUNE RESPONSE TO THE BNT162B2 VACCINE IN LYMPHOMA PATIENTS

Topic: Infections in hematology (incl. supportive care/therapy)

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Background: In most individuals, protective humoral and cellular immunity develops after two doses of the BNT162b2 Pfizer vaccine. In patients with lymphoma, humoral response is weaker and almost universally abrogated in patients who received anti-CD20 monoclonal antibodies. Whether cellular immune response is also abrogated is unknown.

Aims:

To determine whether patients with lymphoma develop specific T-cell mediated cellular response to BNT162b2 Pfizer vaccine.

Methods: We included patients with lymphoma above the age of 18 years who received two doses of the BNT162b2 Pfizer vaccine and collected clinical and demographics data. T-cell immune response to the vaccine was analysed in patients’ blood samples stimulated by spike antigen and quantified by two methods: (1) Interferon-gamma (IFNg)-release assay (IGRA, Euroimmmun, Germany)- IFNg was quantified by ELISA (DuoSet, R&D Systems, Minneapolis, Minnesota, USA) and response above 50 pg/ml was considered positive. (2) Flow cytometry- Quantification of the T cell activation markers, CD134+ CD25+CD69+ T-cells was performed (Act-T4 CellTM kit, Cytognos, Spain), and any response above 0 was considered positive. Humoral response was measured by SARS-CoV-2 IgG II Quant (Abbott©) assay. The positive cut-off was set at 50AU/ml. Blood samples were drawn approximately 4 months after the second vaccination.

Results: Sixty-nine lymphoma patients, treated with two vaccine doses, were included in this study. Median age was 66 (range: 30-84) and 39 (57%) were males. Sixty-two patients (90%) had non-Hodgkin lymphoma (NHL) including 18 with DLBCL, 26 with follicular lymphoma and 14 with marginal zone lymphoma. Seven (10%) patients had Hodgkin lymphoma. In this cohort, 70% (n=49) of the patients received anti CD20 MoAb, and 35% of them (n=27) were still on anti CD20 treatment. Thirteen patients received bendamustine-based immunochemochemistry. At the time of assessment (median 4.8 months after the 2nd vaccine) anti-spike antibodies were detected in only 42% (N = 29) of patients. In comparison, there was an increase in specific T cell response by any assay (IGRA and Flow) in 49% of patients (n = 34). The correlation between the IGRA and flow data was 0.7 (pearson correlation, P = 0.01). However, no correlation between humoral (qualitative and quantitative) and T cell response was shown, regardless of the assay applied. Cellular response was not correlated with the time elapsing from last immunochemochemistry. In the anti-CD20 MoAb treated cohort, of which 27 patients were still on active treatment at the time of vaccination, only 2 patients (7%) developed a humoral immune response, while cellular immunity was elicited in 52% (N = 15) patients (ELISA assay). In the Bendamustine treated cohort, with a median time from end of treatment to vaccination of 23 months (1-106 months), humoral but not cellular response correlated positively with the time from treatment completion to vaccination (p=0.04).
Summary/Conclusion: The rate of cellular and humoral response to two doses of the BNT162b2 Pfizer vaccine in lymphoma patients was found to be significantly abrogated. In this small cohort, 49% of patients developed a cellular response despite a severely abrogated humoral immunity. These findings suggest that vaccine administration should be considered even early after anti CD20 therapy despite the reduced humoral immunity. These findings should be validated in studies with a higher number of patients.