PR1 peptide vaccine in myeloid malignancies

PR1 peptide vaccine might induce an immune reaction with an associated clinical response in patients with myeloid malignancies, according to results from a recent phase 1/2 trial.

PR1 is a nine aminoacid-long peptide from two antigens overexpressed in myeloid leukaemia cells, proteinase 3 and neutrophil elastase. 66 HLA-A2-positive patients with myelodysplastic syndrome (n=11), chronic myeloid leukaemia (n=13), or acute myeloid leuakemia (n=42) received between three and six total doses of the PR1 vaccine (0·25, 0·5, or 1·0 mg peptide per dose in adjuvant) and granulocyte-macrophage colony-stimulating factor (75 µg), administered subcutaneously every 3 weeks.

Minimal toxicity was observed, and 35 (53%) of 66 patients had an immune response (two-fold or greater increase in PR1-specific cytotoxic T lymphocytes). 12 (23%) of 53 evaluable patients with active disease had an objective clinical response; nine (75%) of these 12 patients were immune responders.

Lead author Muzaffar Qazilbash (MD Anderson Cancer Center, Houston, TX, USA) said, "There was a good correlation between immune response and clinical response." He added that PR1 vaccine might prove most beneficial "for patients who have already been treated or who are at high risk of relapse… or for patients after a stem cell transplant, to eradicate any residual disease".

Ryotaro Nakamura (City of Hope, Duarte, CA, USA) commented, "This trial was started in 2000. This is one of the first studies to show that a peptide vaccine targeting an overexpressed tumour antigen, PR1, is safe and associated with a rise in PR1-specific T cells in about half of the patients. The immunological response appeared to be associated with therapeutic efficacy." Nakamura noted, "While the study demonstrates the proof of concept, its clinical significance remains to be seen as the response rate was modest, and a majority of responses were seen in low-volume disease. The findings from the current study could serve as a foundation for future combined immunotherapeutic approaches."

Don J Diamond (City of Hope) added, "The field of peptide vaccines against leukaemia is still evolving; vaccine against a self-antigen is a difficult bar to meet. A formal, blinded, randomised trial of placebo versus optimal dose should be done, so that we know for sure if the vaccine by itself is causing an immune reaction and if the clinical response could be attributable to the vaccine."

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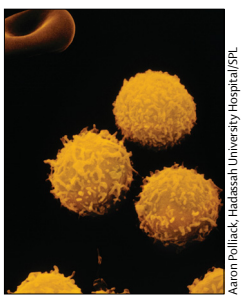

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For the **study by Qazilbash and colleagues** see *Leukemia* 2016; published online Oct 18. DOI:10.1038/leu.2016.254