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Br J Haematol. 2002 Jun;117(4):821-7.

Evidence that continued remission in patients treated for acute leukaemia is dependent upon autologous natural killer cells.

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Abstract

Although it has been known for more than 40 years that allogeneic immune responses cure leukaemias after bone marrow transplantation, autologous leukaemia-specific immunity remains controversial and its impact upon survival has not been established. Here we have tested 25 patients with de novo acute leukaemias, while in remission at completion of their anti-leukaemia therapy, for evidence of autologous cytolytic immunity to their leukaemic cells taken and cryopreserved at disease presentation. We have measured this degree of cell-mediated cytotoxicity in vitro and termed it "leukaemia cytolytic activity" (LCA). Patients whose disease ultimately relapsed had significantly lower LCA than those who remained in remission beyond 2 years ($P < 0.001$); the absence of LCA when in remission predicted subsequent relapse within 2 years with a sensitivity of 100% and specificity of 77%. LCA was mediated in vitro by CD56+/CD8alpha+/CD3- natural killer cells. We propose that it is this immune response, rather than the chemotherapy per se, which is responsible for continued remission and that measurement of LCA in patients at completion of therapy may be used as an indicator of risk of subsequent relapse. Patients lacking this response will require further treatment, either with an allogeneic donor transplant or an alternative immunotherapeutic strategy.

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