Long-lasting HIV suppression by combined immunotherapy

Powerful monoclonal antibodies able to neutralise many HIV-1 circulating viral variants (bnMAbs) are safe and effective, reducing viraemia and delaying viral rebound in patients chronically infected with HIV-1.[1] However, single-bnMAb therapy does not maintain long-term virus suppression and, similar to what was described during the early days of antiretroviral therapy, resistance to antibodies arises. Combinations of bnMAbs directed to different sites on HIV-1 envelop protein (Env) are needed. Two phase 1b clinical trials have shown that combination bnMAb therapy (with 3BNC117 and 10-1074) targeting different sites on Env effectively suppressed HIV-1 for months. In one of these studies, Mendoza and colleagues[2] tested these bnMAbs in 11 people infected with HIV-1 who had suppressed viraemia with antiretroviral drugs. Administered during analytical treatment interruption, three infusions of these antibodies (at 0 weeks, 3 weeks, and 6 weeks) were sufficient to maintain viraemia below detection levels, for more than 15 weeks (mean of 21 weeks), in nine individuals with antibody-sensitive viruses in their reservoirs.[2] In the other study, Bar-On and colleagues[3] assessed the same bnMAb combination in seven untreated participants with detectable HIV-1. bnMAbs significantly reduced viraemia (2 $\log_{10}$ on average) and limited the emergence of resistant viral variants for an average time-frame of 12 weeks in the four patients who had dual antibody-sensitive viruses.[3] If these results can be confirmed in larger numbers of individuals, bnMAbs could simplify treatment for people who are taking daily medication and would reduce the risks of drug resistance and toxic effects. Furthermore, bnMAbs could increase efficacy of antiretroviral therapy by augmenting antiviral immunity[4] and targeting viral reservoirs.[5]

I declare no competing interests.

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