

immune therapies

Immune therapies are treatments which influence or modify certain components of the immune system. Apart from drugs designed to attack HIV directly, a number of immune therapies are also being investigated for use by people with HIV for the purpose of boosting immunity and to try to correct the abnormalities seen in HIV infection.

Interleukin-2 (IL-2)

Cytokines are chemical messengers secreted by immune cells which co-ordinate and control the intricate workings of the immune system. IL-2 is a type of cytokine which encourages the growth of CD4 T-cells. Genetically engineered, or recombinant, IL-2 is being tested as an immune therapy for people with HIV.

IL-2 is a very efficient trigger of HIV replication, because when it activates CD4 cells it also activates HIV-infected CD4 cells. For this reason, IL-2 has tended to be tested in combination with anti-HIV therapy to suppress the HIV activation. A current UK study is investigating its use alone. Other research is looking at whether IL-2 might have a role in attempts to purge HIV from the reservoirs of long-living immune cells which appear to be persistently infected despite long periods of potent anti-HIV therapy.

People treated with IL-2 plus anti-HIV therapy experience a significant, sustained improvement in their CD4 counts compared to people who receive anti-HIV therapy alone. It is not clear whether this signifies improvement in the function of these CD4 cells. It's also not clear at present whether IL-2 will affect the long-term risk of disease and death.

Today, IL-2 tends to be given in five day cycles which recur every couple of months. Treatment is given by subcutaneous (under the skin) injection to improve the rate of side-effects. However, side-effects can still be very unpleasant, often described as similar to a bout of flu.

Remune

A vaccine is a substance intended to stimulate the body's own immune defences against a micro-organism. While preventative vaccines are designed to protect the recipient against initial infection with a micro-organism, therapeutic vaccines are designed for people who are already infected with a micro-organism.

In HIV research, the lead candidate in this category is *Remune*, a therapeutic vaccine made from HIV particles which have been made harmless. The theory is that by injecting these particles into people who are already infected with HIV, the immune system may be stimulated to mount a greater response not only to the killed HIV particles in *Remune*, but also to real virus particles and HIV-infected cells in the body.

Studies are still ongoing.

Immune restoration with anti-HIV drugs

At present, the most commonly used immune boosting therapy is anti-HIV treatment itself. Most people who respond well to combination therapy have a dramatic increase in their CD4 count in the first few months of treatment, followed by a more gradual rise during subsequent months. This later phase is accompanied by improved function and restoration of a wider range of immune responses.

Until relatively recently, there was concern that immune recovery may not be possible for people whose immune damage had reached a 'point of no return'. However, there are now many studies showing that even people with extremely low CD4 counts can experience very substantial increases in their CD4 cells during combination therapy. This recovery of immune capacity is responsible for the declining disease and death rates seen amongst people with HIV in much of the developed world.

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