MedicalXpress

Noninvasively seeing a clear picture of immune cell function in vivo

May 17 2010

Immune cell function in an individual can be monitored noninvasively in the clinic using a technique known as a PET scan.

A team of researchers, led by Owen Witte, at the University of California, Los Angeles, has now determined that in mice two different PET probes used in the clinic to monitor immune cell function detect distinct immune cell populations. These data have implications for the interpretation of clinical PET scans performed with these two probes and suggest these probes could be used in the clinic to monitor the effects of drugs designed to target specific immune cell populations.

Immune cells use more glucose as their energy source when active. There are specific PET probes that can be used to detect this switch to increased glucose utilization. In this study, the researchers found that in mice with a retrovirus-induced sarcoma (a form of cancer that arises from connective tissue cells such as bone, cartilage, and fat cells) two PET probes that detect increased glucose utilization (FDG and FAC) accumulated in different immune cell populations.

Specifically, FDG accumulated mainly in innate immune cells, while FAC accumulated predominantly in active CD8+ T cells. These data suggest that PET could be used more widely than it is currently to noninvasively evaluate the effectiveness of numerous immune modulating therapies.

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