Telmisartan to reduce insulin resistance in HIV-positive individuals on combination antiretroviral therapy: the TAILoR dose-ranging Phase II RCT

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Plain English summary

The TAILoR dose-ranging Phase II RCT

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Plain English summary

Human immunodeficiency virus (HIV) infection in humans is now a chronic disease that is treatable by a combination of anti-HIV drugs. This has resulted in a reduction in HIV-related deaths, but it has also led to the emergence of serious side effects, such as HIV-associated lipodystrophy, diabetes mellitus and, importantly, an increase in the risk of ischaemic heart disease. A key abnormality seems to be insulin resistance. There is a need to find new strategies to reduce insulin resistance in individuals infected with HIV, which would ultimately reduce the associated cardiovascular risk.

In the current randomised clinical trial, we have investigated whether or not telmisartan, a drug that is widely used for hypertension, can reduce insulin resistance in individuals infected with HIV on anti-HIV drugs. We used a novel adaptive trial design to compare three different doses of telmisartan with the control group (those individuals who do not take telmisartan) in the initial stage. We then selected the best telmisartan dose for the second stage, in which it was tested against the control to determine the effect on insulin resistance. We also tested the effect of telmisartan on body, liver and limb fat, blood proteins (markers of metabolic disease) and urine proteins.

A 80-mg dose of telmisartan was taken forward into the second stage of the study. Telmisartan did not reduce the primary marker of insulin resistance [homeostatic model assessment of insulin resistance (HOMA-IR)] over 24 weeks. It also did not affect the levels of lipids or hormones produced by fat cells. However, over 48 weeks, it led to marginal improvements in another marker of insulin resistance [revised Quantitative Insulin Sensitivity Check Index (QUICKI)], a marker of inflammation (high-sensitivity C-reactive protein) and reduced protein excretion from kidneys. Magnetic resonance imaging analysis showed a reduction in liver fat content. Overall, we did not show an effect of telmisartan on our primary marker of insulin resistance in individuals infected with HIV who are on antiretroviral drugs.

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This report

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