

**Scottish DHIVA
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Critical Appraisal**

KQ1: Are there any dietary factors linked with lipoatrophy: either causing it or helping to reverse it

KQ2: What are the effects of intervention with lifestyle and diet on the metabolic Syndrome

Lipoatrophy and Metabolic Syndrome are more commonly occurring in the HIV population, and can be associated with Highly Active Antiretroviral agents (HAART) (1) and HIV alone (2).

Our group were interested in reviewing literature to examine the two questions above. The panel conducted a literature search using Medline, Embase and Cinahl to determine any literature associated with the above two questions.

The methodological analysis for evaluating papers was undertaken using the methodology employed by Scottish Intercollegiate Guidelines network (SIGN) (3). With regards to Lipoatrophy papers were only included if they examined lipoatrophy and not lipodystrophy as whole syndrome.

Results and conclusions are as follows:

Causes of Lipoatrophy: Weight loss

Weight loss was shown to be significantly associated with the development of lipoatrophy. However this was shown in only one paper (4) which was a single cohort study investigating the clinical factors associated with Lipoatrophy. The authors showed a significant association between with development of Lipoatrophy and Weight loss >7Kg, $p < 0.001$. Factors also associated with lipoatrophy were Stavudine use $p = 0.003$, HIV infection >80 months $p = 0.021$ and male population $p = 0.071$.

The researchers tried to look at dietary intake however the questionnaire used to examine dietary intake was of poor quality and not a good measure of actual true dietary intake, therefore results should be interpreted with caution.

The researchers also found in this study no association between weight gain and lipoatrophy reversal.

Reversal of Lipoatrophy with Pravastatin

A Single centre, randomised, double blind, placebo-controlled 16 week pilot study (5) investigated the effect of Pravastatin on markers of CV risk and lipodystrophy in HIV infected, PI treated men with hypercholesterolaemia. A secondary end point of this study found that Pravastatin had some effect on increasing subcutaneous limb fat (investigated using DEXA and CT) $p < 0.04$. The authors concluded from this study that further research is required to investigate if increased limb fat is sustained with prolonged Pravastatin use.

The effect of Lifestyle and Diet on Metabolic Syndrome.

Two papers investigated intervention of diet and lifestyle factors on Metabolic Syndrome in HIV positive group.

One randomised intervention trial (6) showed that an intervention lifestyle programme of 3hr physical exercise weekly and healthy eating derived from American association of Clinical Endocrinologists, NCEP and DPP guidelines resulted in a significant reduction in waist circumference $p=0.017$, systolic blood pressure $p=0.008$ and increased activity $p=0.014$. However lipid levels were not affected by this intervention. The paper did not reveal exactly to what level the physical activity was performed. The paper also did not show if by reducing the risk factors this would reduce the incidences of metabolic syndrome and cardiovascular events.

Another cohort study (7) investigated the relationship between dietary intake, body composition and metabolic parameters. The authors found that modifiable dietary factors such as PUFA fats, fibre ($p=0.001$) and alcohol are strongly associated with Insulin resistance and hyperlipidemia independent of age, sex, PI use, and body fat distribution. A 5g increase in dietary fibre daily was associated with a 14% reduction in IAUC $p=0.001$. Patients with mixed lipodystrophy might be more severely affected with regard to insulin resistance, showing a significantly greater fasting hyperinsulinemia ($p<0.05$) compared to lipoatrophy group alone. However further studies are required before conclusions can be made on dietary fibre intake and insulin resistance in metabolic syndrome in HIV patients.

In conclusion:

Only very small data is available on dietary and lifestyle factors associated with lipoatrophy and Metabolic Syndrome.

- Interesting data emerged on the use of Pravastatin increasing limb fat in lipoatrophic patients, more studies are needed to investigate this effect of Pravastatin.
- Weight loss appears to have some association with the development of lipoatrophy. Patients should be monitored regularly for unnecessary weight loss in an aim to prevent development of lipoatrophy.
- Encouragement of lifestyle factors such as exercise and healthy diet appear to help in the prevention of developing risk factors associated with metabolic syndrome and cardiovascular disease. Healthy eating and exercise should be encouraged, with an aim to achieve patients RDA's for macro and micronutrients. Further studies are necessary to investigate any independent nutrients such as dietary fibre and their role in prevention of risk factors associated with the Metabolic Syndrome in HIV.

References

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