Antiretroviral therapy-induced lipodystrophy

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DESCRIPTION

A 55-year-old man was detected with pulmonary tuberculosis 5 years earlier and was also detected to be HIV positive with a CD4 count of 362/mm³. A course of antitubercular therapy (oral isoniazid 300 mg once daily, rifampicin 600 mg once daily, ethambutol 1000 mg once daily and pyrazinamide 1500 mg once daily) was given for 6 months and the patient was cured of tuberculosis. The patient was started on antiretroviral therapy (ART) comprising of zidovudine, lamivudine and nevirapine. Over the next 2 years, the course was uneventful but there was progressive decline in CD4 count and increase in HIV viral load. In view of immunological and virological failure, second line ART was started 3 years ago (zidovudine 300 mg twice daily, tenofovir 300 mg once daily, lopinavir/ritonavir 400/100 mg twice daily).

After about a year of changing ART, the patient developed hollowing of cheeks, loss of orbital fat (figure 1), temporal wasting (figure 2) and truncal obesity. Investigations showed impaired fasting glucose, hypertriglyceridaemia and hypercholesterolaemia. Other endocrine and metabolic workup, and remaining investigations, were normal. A possibility of ART-induced lipodystrophy was considered.

Figure 2 Showing temporal wasting.

The patient was advised lifestyle modification, and started on atorvastatin and metformin; zidovudine and lopinavir were changed to abacavir and saquinavir, respectively.

ART-induced lipid disorders include lipoatrophy, which is characterised by selective loss of peripheral adipose tissue from sites such as the face, temporal scalp and buttocks; and lipodystrophy, which is abnormal deposition of this fat at central sites including the trunk and dorsocervical spine, or viscerally in muscles and liver. This commonly occurs with zidovudine, didanosine, stavudine and most protease inhibitors (PIs).¹

The pathogenesis of adipose cell dysfunction is not clear. Nucleotide reverse transcriptase inhibitors cause lipolysis by inducing mitochondrial dysfunction, and modifying adipocyte phenotype and pattern, by secretion of cytokines and production of reactive oxygen species. PIs may induce lipoatrophy by inhibiting sterol regulatory enhancer-binding protein and peroxisome proliferator-activated receptor, which are involved in lipogenesis. They also inhibit lipogenesis and adipocyte differentiation and stimulate lipolysis.² This may be associated with metabolic abnormalities such as dyslipidaemia, impaired fasting glucose or insulin resistance, and may lead to atherosclerosis and coronary artery disease. A high index of suspicion is required along with regular monitoring when caring for patients on ART. The treatment of lipodystrophy is difficult and includes lifestyle modifications, switching to non-lipodystrophic ART, statins, fibrates, metformin, thiazolidinediones and growth hormone.³

Figure 1 Showing hollowing of cheeks and loss of orbital fat.

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Learning points

- ▶ Antiretroviral therapy-induced lipoatrophy is characterised by selective loss of peripheral adipose tissue from sites such as the face and temporal scalp; and lipodystrophy, which is abnormal deposition of this fat at central sites such as cervicodorsal; or visceral fat.
- ▶ It is associated with metabolic abnormalities such as dyslipidaemia, impaired fasting glucose or insulin resistance, which may lead to atherosclerotic disorders.
- ▶ This commonly occurs with zidovudine, didanosine, stavudine and most protease inhibitors.

Competing interests None.

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