

## Lipomatosis: An Unusual Side-effect of Cytotoxic Chemotherapy?

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The onset of multiple lipomas coinciding with cytotoxic chemotherapy has not been described previously in the literature. We report here the case of a man who presented with multiple lipomas after treatment for Hodgkin's lymphoma. A review of the literature follows, with a discussion of the inherited and acquired disorders of lipomatosis.

### CASE REPORT

A 53-year-old man presented to the surgery outpatient clinic with multiple, subcutaneous, soft, and mobile lesions on his torso, back and upper limbs (Fig. 1). They were of various dimensions and were clinically consistent with lipomas. They were not painful and had not recently increased in size. One of the lipomas on his left arm (Fig. 2) had become symptomatic due to repetitive movements while using a computer keyboard.

The lipomas had developed *de novo* after cytotoxic chemotherapy. He was diagnosed in 1985 following a left pneumonectomy with Hodgkin's lymphoma. His chemotherapeutic regime comprised MOPP (mechlorethamine, vincristine, procarbazine and prednisolone). His chemotherapy was completed in 1986. He was followed up with annual clinical assessment, full blood count and chest radiography. He had no recurrence on follow-up. He had no significant medical history. He was a non-smoker and consumed only a moderate amount of alcohol. He had no family history of lipomas.

The symptomatic lipoma was enucleated completely under local anaesthetic. The histology showed mature



Fig. 1. Numerous, lipomas of various sizes on the patient's trunk, shown here on his back. (A left pneumonectomy scar is also evident).



Fig. 2. Lipomas on both upper limbs. The encircled lipoma on the left forearm was symptomatic and was excised under local anaesthetic.

lobulated adipose tissue with many small blood vessels containing fibrin, consistent with an angioliipoma, which is a variant of a lipoma.

### DISCUSSION

A review of the literature revealed no similar cases of onset lipomatosis associated with cytotoxic chemotherapy. Mechlorethamine, vincristine, and procarbazine have not previously been reported to be associated with lipomas or any other acquired cutaneous or subcutaneous lesions. Long-term treatment with corticosteroids is associated with the rare condition spinal epidural lipomatosis (1, 2). Overgrowth of epidural fat develops, followed by signs and symptoms of cord compression. The underlying aetiology for this syndrome is not clear. Mediastinal lipomatosis is another rare but reported complication of long-term corticosteroid use (3, 4). This is a benign condition, which is characterized as symmetric unencapsulated accumulation of fat in the mediastinum. Our patient did not receive long-term steroid treatment; however, he did receive steroids with his chemotherapy. There are no documented cases of subcutaneous lipomas associated with steroid use.

There are, however, many syndromes associated with multiple, subcutaneous lipomas. There is a hereditary syndrome of lipomatosis, familial multiple lipomatosis (FML) (5, 6). In FML, lipomas are usually painless and patients are not troubled by the disease.

The most commonly reported cause of acquired lipomatosis is Launois-Bensaude syndrome or Madelung's

disease. It can also be known as benign symmetrical lipomatosis or multiple symmetrical lipomatosis. It is typically characterized by massive symmetrical fat deposits located mainly in the neck and shoulder region. While the cervical area is involved in all cases, involvement of other parts, such as the shoulder, pectoral, abdominal, or inguinal areas, ranges between 40% and 80%. The disorder was first described by Brodie (7) in 1846. The disease was subsequently characterized by Madelung (8) in 1888 and Launois & Bensaude (9) in 1898. Benign symmetric lipomatosis are usually described in adults aged 30–60 years, with an incidence of approximately 1 in 25,000 and a male-to-female ratio of 15:1 to 30:1. The majority of cases are sporadic. Clinical phenotypes are recognized as type I multiple symmetric lipomatosis (Madelung's collar) (10), affecting in particular men with fat accumulation in the neck, nape of the neck, shoulders, upper arms, and upper back; and type II, which affects women and is characterized by a superabundant female fat distribution in the upper back, deltoid region, upper arms, hips, and upper thigh region, giving the appearance of simple obesity. Ninety percent of the cases are associated with alcoholism (11). The disease also occurs in patients who do not drink alcohol and other metabolic disorders have been described in association with benign symmetric lipomatosis are hyperuricaemia, hyperlipidaemia, hyperlipoproteinaemia, diabetes mellitus, hyperthyroidism, hypothyroidism, and hypogonadism. One case has been described with onset after liver transplant (12). Treatment is limited to surgical removal of the fatty tissue, either directly or with suction-assisted lipoplasty. Dietary restriction provides no relief. Abstinence from alcohol may arrest further progression of the lesions, but does not cause regression of the deformity. Despite the risk of recurrence, surgery remains the only effective treatment option.

Cowden syndrome is a condition caused by a mutation in *PTEN*, a tumour suppressor gene. This syndrome is associated with skin manifestations, such as multiple lipomas (13). Dercum's disease or adiposis dolorosa is a condition also characterized with multiple lipomas, but these are painful and mainly occur in women, especially post-menopausally (14). Neither of these seemed likely in this case. The exact aetiology of this

patient's new onset lipomatosis is unknown. It certainly has features suggestive of Madelung's disease type I. There has only been one reported case of malignant transformation of a lipoma in Madelung's disease to a mixoid liposarcoma (15). Ongoing surveillance is not required and management would be surgical excision of symptomatic lipomas.

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