Autologous lipotransfer canimprove the outcomes of localised scleroderma

Sir,

Localised scleroderma, also known as mor-phea, presents heterogeneously, from smallplaques to extensive linear morphea thatcan cause joint contracture, limb length dis-crepancy and significant functional impair- ment (1). Morphea further impacts patient quality of life through cosmetic disfigure- ment, with patients reporting embarrass- ment, stigmatisation, along with high rates of anxiety and depression (2).

Treatment options for morphea target the underlying disease process, however, treat- ments for established disfigurement are ex- tremely limited (3). Autologous fat grafting(AFG), also known as autologous lipotrans-fer, is an increasingly popular reconstruc- tive technique with demonstrated utility in the treatment of fibrotic conditions such as systemic sclerosis and radiation-induced fi-brosis (4, 5). AFG is useful for reconstruct-ing soft-tissue volumetric defects, however,recent research has also demonstrated re- generative and antifibrotic properties, pu- tatively through the presence of Adipose Derived Stem Cells (ADSCs) (6).

Literature reporting the use of AFG in mor-phea is sparse (3). We report our experience with two patients presenting with morphea predominantly affecting the lower limb. We performed AFG through the technique described by Coleman; in short, fat is har- vested from the abdomen using a cannula connected to a 20ml Luer-Lock syringe, thelipoaspirate is centrifuged at 3000rpm for 3minutes, with the blood and free oil being discarded before grafting (6).

The first patient was a 22-year-old female with linear morphea of the left lower leg, including the groin, posterior knee, dorsum of foot from the age of 11. After successful treatment with methotrexate, she relapsed following the birth of her first child. De- spite increased methotrexate and the addi- tion of multiple systemic and topical treat- ments, her morphea worsened. She requiredphysiotherapy, cognitive behavioural ther- apy and cosmetic camouflage. 48ml of fat was harvested from the abdomen and both thighs and transferred into the left leg using the Coleman technique (6). Despite incom- plete graft retention, the patient was able tostop all systemic treatment for her second pregnancy, with her morphea remaining stable.

The second patient was a 29-year-old fe-male with morphea of the left leg, abdomenand arm that started from the age of 17. Shewas treated with intravenous steroids, topi- cal therapy and phototherapy as she did nottolerate further systemic therapy. Extensivefibroatrophic changes to her left leg and footresulted in difficulty walking or standing, the need for orthotics, with progressively limited movement of her ankle and knee. AFG was harvested from the abdomen and grafted to the thigh, tibial border, heel and plantar surface of the foot. Despite incom- plete graft retention, the patient experiencedimprovement in joint mobility which per- sisted at long-term follow-up (Fig. 1).

AFG is a minimally invasive, safe techniquethat utilises a readily available autologous substrate with minimal donor site morbid- ity. Its ability to produce long-term sympto-matic improvements has been demonstratedin other fibrotic conditions (4, 5). The caseswe report here demonstrate its potential util-ity as a treatment for morphea, including insevere cases causing functional deficit.

The mechanism by which AFG reverses tissue fibrosis is not well understood, how- ever, graft ADSCs are implicated through enhancing angiogenesis, localised immu- nomodulation and inhibition of transform- ing growth factor beta1 (TGF-β1) signal- ling (7). ADSCs are thought to promote tissue angiogenesis indirectly throughvascular endothelial growth factor (VEGF) expression and directly through differentia-tion into endothelial cells (8). TGF-β1 is a potent inducer of collagen synthesis andplays a key role in tissue fibrosis; the mech-anism by which AFG reduces its expressionis poorly understood, but thought to be the result of paracrine signalling between AD- SCs and fibroblasts (4).

AFG has shown significant promise in the treatment of fibrotic conditions. Utilising AFG in the treatment of morphea has, so far, been limited, but promising early re- sults warrant further investigation of this innovative treatment modality and its un- derlying mechanisms.

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Fig. 1. Patient 2 pre- operatively (left) and 5 years post-Autologous Fat Grafting (right), demonstrating sustained improvement in her joint contracture.