ME AND MY NEUROLOGICAL ILLNESS

Ski boot neuro

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This year's skiing trip had an unusually neurological flavour, reminding us of what we once knew – the neuroanatomy of the foot. And what we should have known – the dangers of colourful new ski boots.

NICK – THE ONCOLOGIST

After many a year just failing to keep my carving skis on their edges I finally decided to buy some new ski boots (Fig. 1). On their first day of use, after an enthusiastic start, I began to experience increasing pain just below my left ankle, but inevitably chose to continue skiing, blissfully unaware that by evening I was to provide a revision crash course in the neuroanatomy of the foot.

ANDY – THE NEUROLOGIST

That evening a fireside examination revealed an area of exquisite tenderness just inferior and posterior to Nick's left medial malleolus, with a clearly dysaesthetic area affecting the medial plantar surface of the foot including the great toe but not extending as far as his heel (Fig. 1). Unbiased by a detailed knowledge of the sensory innervation of the foot, we outlined the true area of altered sensation (confirmation was to follow only after the holiday, Stewart 1993). Tinel's test was positive. There was no motor involvement, in particular the abductor hallucis and toe flexors were of normal strength.

Our diagnosis was of a partial (sensory only) neuropathy of the medial plantar nerve secondary to the tight new boot – like all good neurological diagnoses it was made, at least in part, with the aid of the retrospectroscope after hitting the books when we got home.

Figure 1 The cause (top), the problem, and the solution. Pressure at the distal end of the tarsal tunnel (marked X) caused sensory symptoms in the distribution of the medial plantar nerve - alleviated by drastic surgery to the old ski boot liner.

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JO, ANDY AND NICK - THE SOLUTION

Ever keen not to waste valuable skiing time, our solution to Nick's problem was to make a wide excision from the lining of his old ski boot thus alleviating the pressure on the nerve (Fig. 1). This done, he skied the remainder of the week, and the dysaesthesia began slowly to improve. The lesson? Know your neuroanatomy and pick a ski boot on the basis of a good fit not a fancy colour. Fortunately Nick was consoled by the happy thought that a medial plantar nerve palsy was a better reflection on his skiing technique than a sural nerve palsy caused by pressure at the top of the ski boot from leaning too far backwards.

DISCUSSION

Lesions of the medial plantar nerve at the distal end of the tarsal tunnel are relatively common, arising from a wide variety of causes including trauma, rheumatoid arthritis, plaster casts, ill-fitting ski boots and many others (Stewart 1993). In addition to sensory innervation the nerve also innervates the abductor hallucis, flexor digitorum brevis and flexor hallucis brevis, although in practice weakness of these muscles is often difficult to demonstrate, and in long standing lesions muscle wasting can be a better clue. Neurophysiology can be helpful in defining lesions in this region (Mondelli *et al.* 2004).

Nerve compression more proximally within the tarsal tunnel is also common, but in this situation there is commonly additional involvement of the lateral plantar nerve (Fig. 2) and the calcaneal nerves supplying sensation to the heel. Furthermore, it is worth noting that a partial tibial, sciatic nerve, or even an S1 root lesion can cause a similar and potentially confusing presentation, but all are usually accompanied by a depressed ankle jerk and weakness of the calf muscles.

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REFERENCES

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Figure 2 (a) The sensory supply to the sole of the foot. (b) The course of the tibial nerve and its branches at the left ankle (based on Stewart JD, 1993 *Focal Peripheral Neuropathies*, 2nd edition, Raven Press, New York).