



AdironDoc

Backcountry Health and Hygiene

Of Swelling and Tingling

BEAR WITH ME—this column starts with an anatomy lesson. The artery, vein and nerves (*brachial plexus*) that supply the arms travel across the upper ribs high in the chest, just under the collar bone, before dipping into the armpit and heading eventually to the fingers. There is a slight problem with this design: these structures lie just underneath most backpack arm straps. The straps can compress these structures against the upper ribs, and create a medical problem unique to trekkers.

When this compression is severe enough or prolonged, it creates one or two problems that the hiker may not realize are due to his or her pack. The first of these is a numbness or tingling in the fingers. This uncomfortable sensation comes from compression of the nerves, and is comparable to the sensation of an arm or leg "going asleep" that we have all felt at one time or another. Because the compression may affect one nerve branch more than another, the sensation may be most prominent in half of the fingers (usually thumb, index and middle). Because our bodies are symmetrical, the problem generally affects both arms similarly.

The second problem results from compression of the vein that returns blood from the arm, as well as the tiny network of "lymphatics" that also carry tissue fluid. Pressure on these structures can cause a small degree of swelling, or "edema," most often of the hands. While this may be so subtle that companions cannot even see it, the hiker may first notice that rings have become tight and that they cannot be easily removed.

While most hikers find these problems to be more of a nuisance than a real health issue, some folks may be really bothered by them. There are several ways to minimize them. First and most obvious, take the pack off as much as possible,

certainly at every rest stop. Experiment a bit with the sternum strap. Sometimes tightening it will lessen the pressure the arm straps place on underlying structures. On the other hand, loosening or even not using the sternum strap will cause the arm straps to slip outward, where they may be less likely to cause trouble. Try to adjust the hip belt so that the pack rides higher, minimizing the load on the arm straps. Most high-end internal frame packs also have adjustable stays that can alter the way the pack "rides." Also, experiment with loading the pack; sometimes having most of the weight low helps. Finally, see if using a different pack makes a difference. While no one style of pack is more or less likely to cause difficulty than another, certain combinations of body build and pack may be problematic.

While neither of these problems is serious, keep in mind that there are other much more serious conditions with which they can be confused. The tingling sensation, for example, virtually never extends beyond the fingers. If such a sensation is also felt on the face or in the legs, if it is dramatically one-sided, or if it is accompanied by muscle weakness, beware! These could be the early warnings of a major nervous system problem, such as a stroke. If the tingling is accompanied by pain, especially of the chest, and if it is worsened by exertion, it could be an early sign of a cardiac event such as a myocardial infarction ("heart attack").

The swelling phenomenon, also, is usually mild and restricted to the fingers and back of the hand. If it progresses, especially if it is one-sided, alternative diagnoses need to

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Experiment with your pack's strap adjustments as well as loading your pack for the best fit.

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be entertained. For example, blood clots can form in the veins of the arm; individuals taking certain medications or those with certain chronic health conditions may be at risk for the development of such clots.

Last but not least, knowing about these common ailments can be a leadership issue. Leaders taking novice trekkers on their first expedition would do well to mention these two problems at some point—perhaps at an early rest break. Someone may well be experiencing the sensation, but afraid to mention it. Anticipating and assuaging concerns is the mark of a good outdoor leader.

—Dr. Thomas M. Welch
For information about this or other backcountry topics, visit Dr. Welch on the Web at <www.adirondoc.com>, or contact him at <info@adirondoc.com>.