ALCOHOL AND BENDS

In this issue of UBR, Zhang et al. (1) present data which suggest that ethanol is effective for treatment of decompression sickness produced in animals by a fairly provocative decompression. Rapidly decompressed rabbits which received i.v. ethanol in doses equivalent to about 2 oz. of pure alcohol for a 70-kg man had significantly lower mortality and fewer bubbles in the major vessels than rabbits that received only saline.

This finding seems to be without precedent in the literature. Also, the mechanism for such an effect is entirely unclear. Although the authors suggest that an ethanol-induced lowering of surface tension may explain the beneficial effect, it is clear that low surface tensions favor nucleation and bubble stability (2, 3). However, the effect that ethanol may have on endogenous surfactants is unknown; ethanol may actually increase surface tension in bubbles in vivo. Also, the effect of ethanol on the behavior of bubble generation sites, such as hydrophobic crevices (4), is not clear. Another possible explanation may lie in the vasoactive effects of ethanol. In any case, speculation regarding mechanisms should await verification of the effect by other laboratories.

The fact that human cases have been prospectively treated with ethanol alone, as mentioned in the paper, is striking, and in fact is cause for some concern. The standard of care for the treatment of decompression sickness remains hyperbaric oxygen therapy. Accepted adjuncts include surface oxygen and fluids and, in some cases, anti-inflammatory drugs. The use of ethanol is not an accepted form of therapy at this time; divers and practitioners of diving medicine should resist the temptation to “try this one out” until tested and verified (preferably in animals) in other labs.

The greatest danger is for readers to extrapolate this potential form of therapy to prophylaxis, and try to prevent bends by prediving imbibing. Extending things further, some divers may be tempted to “push the tables,” as long as they have a “couple on board.” Drowning remains the principal cause of mortality in diving, and impaired judgment resulting from predive ethanol ingestion is far more likely to cause an increase in mortality than to be beneficial in preventing decompression sickness. Thus, while the paper by Zhang et al. is certainly intriguing, and possibly important, caution should be exercised until these observations have been verified and expanded.

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REFERENCES