

Experimental and clinical observations on frostbite.

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Abstract:

Experimental ischemia by the classic frostbite rabbit ear model clearly defined the role of thromboxane as a mediator of progressive dermal ischemia in frostbite injuries. The therapeutic groups consisted of the antiprostanooids, methylprednisolone, and aspirin combined with anti-thromboxane agents Aloe vera and methimazole, while the control group received no therapy. Survival was measured by planimetry for all groups. No tissue survival was evident in the frostbite control group. Methimazole treatment allowed 34.3% survival, Aloe vera 28.2% survival, aspirin 22.5% survival, and methylprednisolone 17.5% survival. The data compare the results of a modified frostbite protocol using ibuprofen with therapeutic modalities used by other clinical services. Of 154 patients treated for frostbite from 1982 to 1985, 56 were treated with our frostbite protocol; 98 were treated with other modalities. Of the 56 protocol patients, 18 suffered 1st degree frostbite, 25, 2nd degree frostbite, and 13, 3rd degree frostbite. For all degrees of frostbite, 67.9% healed without tissue loss, 25.0% healed with partial tissue loss, and 7% required amputation (P less than .001). Of the patients not on protocol, 11 suffered 1st degree frostbite, 51, 2nd degree frostbite, and 36, 3rd degree frostbite. Of these, 32.7% healed without tissue loss, 34.6% healed with tissue loss, and 32.7% required amputation. The morbidity of progressive dermal ischemia in frostbite may be decreased by the therapeutic use of inhibitors of the arachidonic acid cascade.