ABSTRACTS OF CURRENT LITERATURE

ANNALS OF EMERGENCY MEDICINE

Randomized Controlled Trial of Intravenous Antivenom Versus Placebo for Latrodectism: The Second Redback Antivenom Evaluation (RAVE-II) Study

Latrodectism is a severe spider envenomation syndrome caused by the widow spider (*Latrodectus* spp). The primary symptoms include local pain at the site of envenomation, generalized pain, muscle rigidity, sweating, and vomiting. Both the regional distribution and type of widow spider affect the severity of symptoms. Although patients may experience severe pain, latrodectism is rarely fatal to humans. Although there are variations in clinical practice for treating latrodectism, mainstays are supportive care and pain control; however, an equine-derived antivenom is also available. The purpose of this study was to investigate the ability of the antivenom to reduce pain and the systemic effects after moderate to severe envenomation by the redback widow spider.

This multicenter, randomized, placebo-controlled trial recruited patients from 20 emergency departments in Australia from 2009 to 2013 after envenomation by a redback widow spider. All patients received standard analgesia with paracetamol, ibuprofen, and oxycodone, and were then randomly assigned to either placebo or antivenom administration. In all, 224 patients were enrolled, and each study arm had similar baseline characteristics. The primary outcomes were reduction in pain and systemic symptoms 2 hours after placebo or antivenom administration. It was found that the placebo arm had a 23% pain reduction whereas the antivenom arm had a 34% pain reduction; however, this was not statistically significant (95% confidence interval: -1.1% to 22.6% ; $P = .10$). Additionally, systemic effects resolved for 22% of patients in the placebo arm and for 26% of patients in the antivenom arm (95% confidence interval: -15% to 23% ; $P = .079$).

The RAVE-II trial expanded on prior research from 3 latrodectism antivenom trials. The investigators conclude that antivenom administration for redback widow spider envenomation does not significantly improve pain or systemic effects when given with standard analgesia. Although treatment effects were not statistically significant, the investigators recognize that a limitation of the study is the small sample size, limiting the power of the study. Moreover, standard analgesia treatment, with or without antivenom, relieved pain in only one quarter of patients after 2 hours. The researchers recognize that further treatment options including calcium, magnesium, muscle relaxants, or neuropathic medications should be investigated to identify alternative options to ultimately improve patient outcomes.

(*Ann Emerg Med.* 2014;64:620–628) GK Isbister, CB Page, NA Buckley, et al.

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Incidence, Mechanism and Risk Factors for Injury in Youth Rock Climbers

Participation in rock climbing has grown significantly in recent years, in both youth and adult populations. Injury patterns, incidence rates, and mechanisms of injury have been studied mostly in adults, focusing on injuries occurring during traditional rock climbing, ice climbing, or alpine climbing. This cross-sectional study aimed to examine injury rates, mechanism, and risk factors for youths who participate in rock climbing and bouldering.

The investigators distributed surveys to recreational and elite youth climbers between the ages of 11 and 19 years at 10 indoor climbing facilities in Alberta, Canada between October 2012 and March 2013. The questionnaire included demographic information, climbing experience, discipline, time spent climbing per week, and injuries sustained while climbing, along with anatomic location of injury, mechanism of injury, and subsequent time lost from climbing. In all, 285 climbers were approached, 62 competitive and 223 recreational climbers ($n = 285$), of whom 126 (44%) consented to participate, and 116 (41%) completed the questionnaire.

The investigators found that the injury incidence rate was 4.44 injuries per 1000 climbing hours (95% confidence interval: 3.74 to 5.23), with sprains (27%) and strains (26%) predominating. The primary mechanism of injury was repetitive overuse (42%), and the most common injury locations were hands and fingers (21%). Falling resulted in a larger percentage of lower extremity injuries. These findings are consistent with reported rates, injury types, and mechanism of injury in adults. Older age, injury in another sport, and preventative taping were risk factors for injury in young climbers.

This study was limited by selection bias, self-reporting, and power as the target sample size of 206 was not achieved. The study does provide insight into the injuries and risk factors for young climbers, however, and provides guidance for further investigation into modifiable risk factors, which, in turn, can be used to develop preventative strategies to target high-risk youth climbers.

(*Br J Sports Med.* 2015;1:44–50) KY Woollings, CD McKay, J Kang, et al.