their preparedness was surprising. Despite the observation that the answering person had not even seen most of the listed emergency procedures, s/he believed s/he was (or excellent) prepared to perform the necessary skills. The possibility to freely express their personal opinions and views was used mostly for negative expressions of the quality of teaching and inadequacy of training.

The relatively low percentage of returned questionaires is a sign of low interest for emergency medicine among medical students. The feelings of preparedness despite the knowledge that the person had not seen or performed some of the therapeutic procedure shows that students' practical skills are not tested or evaluated by teachers.

Conclusion: There is an urgent need to increase the partition of emergency medicine in medical curriculum. The use of simulators could be a solution to those deficit in training, because there are not enough patients whose treatment should provide sufficient opportunities for practical and guided training. Simulation programs also could offer possibilities for testing the real preparedness in emergency care.

Key words: emergency medicine; medical curriculum; perceived abilities; self assessment; simulations; training

Transdermal Application of Ketamine: A Pilot Study

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We performed our first experiments to investigate the local anesthetic effects of ketamine applied to denuded suction blister bases in 1995.[1,2,3] The pin prick test was used to demonstrate the effectiveness the local anesthesia. In a later experiment, a topically applied mixture of ketamine (Ketalar, Parke-Davis) and the ointment base (Aqualan7, Orion Pharmaceuticals) under occlusion was tested, and it also was found to have a local anesthetic effect, thus making minor laser surgery possible.

In all of our previous experiments, the one common observation has been extrapyramidal side-effects of short duration. This systemic effect was present even after the administration of minimal doses. This prompted us to attempt transdermal application of ketamine through intact skin to produce analgesia.

In in-field and disaster medicine, the relief of pain in the wounded or in traumatized patients is an integral part of emergency treatment. In this respect, ketamine is accepted widely as the first-choice analgesic. Parenteral administration of an analgesic requires training and experience, whereas transdermal application of an efficient analgesic, such as ketamine, can be performed even without previous experience or even can be self-administered by a conscious patient.

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Key words: amnesic effects; analgesia; anticovulsant therapy; bronchodilator; disaster; disaster medicine field anesthesia; local anesthetics agents; ketamine; pain; sedative; training

Drying of Foot and Hand-Wear: Preliminary Results with a New Drying Device

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In all circumstances, moisture accumulation into and wetness of foot-wear causes discomfort, increases the risk of bacterial and fungal infections, predisposes the skin of the feet to march blisters, and last but not least, destroys and shortens the life of foot-wear.[1] In warm weather, moisture causes objective changes in the skin of the foot that are compatible with the warm-water immersion foot syndrome.[2] Its symptoms include soreness of the feet, erythema, and pain. Especially during the cold season, moist foot-wear accelerates cooling of the organism, e.g., during halts and rests. The risk for frostbite becomes a reality when the skin temperature falls to about 10°C. Also, moist and wet gloves and mittens cause discomfort and during the cold season increase the risk of frostbite. Furthermore, cold-induces significant decreases in the function and dexterity of the hand.[3] Only adequate and dry foot- and hand-wear provide optimal protection. This is important especially in field conditions.

We have performed preliminary testing of a new drying device, APuhuri®, intended for simultaneous drying of 18 pairs of foot- and/or hand-wear in an ambient temperature of 0° to 45°C. The test results are promising and will be presented.

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Key words: ambient temperature; effects of moisture; frostbite; immersion foot; moisture; prevention; skin temperature; trench foot

Ketamine and Lidocaine as Local Anesthetics in Minor Dermatological Surgery

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Ketamine with adrenaline was used as a local anesthetic for the removal of naevi, dermatofibromas, and verrucae in a double-blind study.[1] Laser surgery was used in 10 and excision using a knife in 22 cases. The ketamine concentration employed varied between 12.5 and 20.0 mg/ml. The adrenaline concentration used was 10 microg/ml. The total doses of ketamine used per patient ranged from 12.5 to 30 mg. Anesthesia as tested using the pin prick, was obtained within 1 to 3 minutes after injection and lasted for up to 11 minutes.

In all patients, the injection of ketamine caused some smarting that lasted for a few to 15 seconds. Erythema always was observed in the injection area and this observation broke the double-blind code. Extrapyramidal side-effects (light-headedness and dizziness) were reported by 18 (56.2%) of our patients.

Conclusion: The use of ketamine as a local anesthetic is similar to the use of lidocaine even when the doses used are small. The only drawbacks of ketamine are its short duration and the high incidence of extrapyramidal side-effects.

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Key words: extrapyramidal effects; ketamine; ketamine-epinephrine; lidocaine; local anesthesia; minor surgical procedures

Disposable and Continuous Use Heaters of Infusion Fluids for Field Use: A Preliminary Report

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Infusion fluids always should be administered at temperatures from 35° to 40°C. This is important especially under field conditions in cold or subzero weather and for hypothermic patients in all weather conditions.

In unexpected situations and exceptional environmental conditions, the readiness to infuse warm fluids especially in the field usually is lacking and preparations to do so may cause significant delays or, in the worst case, be impossible. In providing primary care to patients in the field, be it civilian or combat, the preparedness for infusing heated fluids should be instantaneous and continuous and usually requires special arrangements.

Two models for solving the problem of infusion of heated fluids are presented: 1) heating of the infusion fluid bag; and 2) heating the infusion fluid as it passes through the tubing. In the first model, the infusion bag is placed within a double-walled, soft plastic container, and the necessary heat is obtained from an exothermic reaction. The second model is battery-powered.

In the first model, heating of the infusion fluid is accomplished in less than two minutes. In the second model, heating of the infusion fluid flowing through the tubing is continuous, and in it, the heater can be placed close to the cannula. This possibility provides the advantage of preventing the heat loss that normally occurs as the fluid flows from the bag through the tubing.

Key words: field care; fluid warmers; fluid warming; hypothermia; intravenous fluids

Junior Ice Hockey Players Exposed to Nitrous Oxides

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Late on a Sunday evening, some parents noticed that their children were coughing following the ice hockey training. The local health information agency telephoned the Swedish Poison-Information Center where the suspicion arose immediately: that the children were expose to nitrous oxides while training in the ice hall. Using the telephone lists of the clubs who had been active that weekend, all of the players were asked to come in for evaluation. A nurse registered 187 persons between 22:30h and 01:00h. Those who were free of symptoms were evaluated in groups by a doctor every hour. They were asked to return if symptoms developed. No training was allowed during the first week following the episode. Those players with symptoms, 62 persons, were checked by four doctors: auscultation, peak expiratory flow measurement, pulse oximetry, blood pressure, and pulse rate were done.

Treatment: General and inhaled corticosteroids and in severe cases, oxygen was administered during the first 24–28 hours in the hospital. Training was not allowed to resume for 2–4 weeks depending on symptoms. Follow-up evaluations done four months after the incident will be presented.

Key words: athletics; corticosteroids; intoxication; nitrous oxide; oxygen