Úrazy v ČHS v letech 2007 a 2008

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Přehled o úrazech nahlášených na ČHS v uvedených letech. Úrazy jsou hlášeny buď zasláním vyplněného „papírového“ dotazníku nebo nově prostřednictvím on-line formuláře.
V roce 2007 bylo nahlášeno celkem 22 úrazů, z toho 3 smrtelné, v roce 2008 je nahlášeno 6 úrazů, smrtelný úraz nebyl nahlášen žádný. Grafy na posteru ukazují, v jaké věkové skupině došlo k nejvíce úrazům, zda šlo o zkušené lezce či začátečníky, počty úrazů v jednotlivých měsících a faktory, které se uplatnily při vzniku úrazů technické, osobní a faktory přírodního prostředí. Dále jsou popsány druhy zranění a terén, na kterém došlo k úrazu.
Vzhledem k tomu, že je tento abstrakt zpracováván se značným předstihem, mohou se čísla uvedená zde lišit od čísel na konečné verzi posteru.

Diagnostika a terapeutické postupy poranění šlachových poutek u sportovních lezců řešených na ortopedickém oddělení Příbram v letech 2006 2007

Autoři: Hebelka F. 1 , Balák J.2 , Švagr M. 1
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Oddělení magnetické rezonance ON Příbram 2

Abstrakt
Cíl studie
Poranění šlachových poutek flexorů je nejčastější úraz ruky a prstů u sportovních lezců. V této práci se snažím ukázat možné diagnostické metody a navrhnout terapeutický postup.
Materiál a metoda
V práci je hodnoceno 20 pacientů (sportovních lezců) s různými typy poranění poutek A2-55%, A4-25%, A2+A3 15%, A2+A3+A4 5%, z toho bylo 90% řešeno konzervativním postupem, 5% operačně a 5% zatím bez operace.
Na posledním případu demonstruji možné trvalé následky v případě neřešení poranění. Pacienti byly sledováni po dobu 6 měsíců, výsledky byly hodnoceny dle doby návratu k lezení, bolestivosti po zátěži a omezení hybnosti. Všichni pacienti byly vyšetřeni klinicky a ultrasonograficky , 40% pacientů bylo vyšetřeno na magnetické rezonanci.
Výsledky
U izolovaných poranění šlachových poutek dle dostupné literatury a naší zkušenosti není nutné operační řešení, dále ani není nutná dlouhodobá lezecká pauza, dle zkušeností stačí doba k ustoupení akutní zánětlivé fáze poúrazově a časné lezení s ochranným tapingem možno již od 3 poúrazového týdne . Diskutabilní a k dalšímu bádání je řešení sdružené léze poutek A2+A3. U tohoto poranění jsme 75% pacientů řešili konzervativně s výsledkem občasných bolestí v PIP kloubu po zátěži a 25% operačně s výborným výsledkem a plným návratem k výkonnostnímu lezení po 5 měsících. . Dále jeden pacient s kompletní lézí poutek A2+A3+A4 s již trvalými následky a zatím bez operace pro graviditu.
Diskuse
Poranění poutek je u sportovních lezců nejčastější traumatické poranění ruky. Pozdně diagnostikované či neřešené poranění může vést k trvalým následkům jako je omezení hybnosti, flekční kontraktury interphalangeálních kloubů , oslabení svalové síly a chronická bolestivost.. Včasná a kvalitní diagnostika a správná terapie může lezce vrátit velmi rychle zpět ke sportovnímu lezení.

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Survey of Sports Injuries to Competitive Climbers and Prevention

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Abstract: In recent years, the popularity of competitive climbing using artificial walls has been increasing worldwide. In Japan, also, the sport has been enjoying a quiet boom among young people, and some climbers have been establishing outstanding record in international competition. Meanwhile, the sport has been accompanied by injuries. In Europe, for example, many young climbers have suffered deformed or broken bones in their fingers.

The present author and colleagues have examined 182 competitions, chosen at random, over a 3 year period at the Junior Olympic Cup (JOC) tournaments which are sponsored annually by the Japan Mountaineering Association. The results of the survey are presented here, together with suggestions for preventing injuries.

1, Object of study and study method:

We examined 182 climbers from age 7 to 19 who participated in JOC tournaments from 2004 to2006. Examinations were conducted by questioning the subjects, feeling their fingers, viewing their fingers visually, and taking X-ray, based on the Bone and Joint Injury Function Table on the Japan Society for Surgery on the Hand.

2, Results:

1) Over a 3 year period we examined the fingers of 182 junior climbers.
2) Abnormalities were found in the fingers of 77.6% of the juniors climbers.
3) The most common injuries to finger joints were light flexion contracture and deformation.
4) Over the 3 year period, overuse of the hands caused suppression of longitudinal growth due to crushing of the proximal epiphysial nucleus of the middle phalanx. At the same time, increased blood flow causes increased transverse growth of the proximal diaphysis of the middle phalanx.
5) To prevent these joint injuries, 20 minutes of cooling by ice immediately after each practice session and competition, and daily stretching, are necessary.
6) We propose that concentrated climbing activities be kept within 3 times ore week, 3houres each time.

Women going to high altitude

Author: Dominique JEAN, MD, UIAA MedCom and CHU Grenoble, France

Non pregnant women

There is no difference between men and women in the incidence of acute mountain sickness, but peripheral edema is more frequent in women. The incidence of high altitude pulmonary edema is lower in women; the incidence of high altitude cerebral edema seems to be similar in men and women. Physiological hypotheses which could explain the differences will be briefly presented.

The menstrual cycle is often disturbed during trekking or expedition, but altitude ascent occurs in combination with other factors which are probably more important: jet lag, heavy exercise, cold, weight loss.

Contraception: oral contraceptives (OCP) do not interfere with altitude acclimatization. But in combination with polycythemia, dehydration and cold, there is a theoretical higher risk of thrombosis. The risk is dependant of estrogen content and type of progestin: so 2nd generation pills are recommended at high altitude. Women should also be aware that efficiency may be reduced by irregular schedule during expeditions or while taking some antibiotics for infectious diseases during the travel.

Some women choose to take continuously OCP or progesterone alone to stop the menses, but it is recommended to begin 3 months before the expedition to avoid breakthrough bleeding. Medroxy-progesterone injections may be a convenient choice.

Latent iron deficiency is common in women and can impede acclimatization because iron is necessary to increase erythropoiesis, especially during expeditions: it is advised to check ferritin levels before expedition to give a supplementation if warranted.

Pregnant women

First, pregnant women should be aware of the risks of travel in remote and exotic countries: far from medical/obstetrical assistance if needed, higher risk of some infectious diseases during pregnancy and contraindications of drugs useful for prophylaxis or treatment.

The incidence of acute mountain sickness is not different during pregnancy, but acetazolamide is contraindicated during the first trimester, and there are specific risks of altitude for the mother and the fetus.

Most studies have been done in permanent residents at high altitude, very few data are available for women living usually at low altitude, and recommendations are based mainly on extrapolations.

Exposure to high altitude during the first trimester is probably safe.

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Later, there is no risk during short stays at moderate altitude (up to 2500 m) at rest or with moderate exercise, if pregnancy is normal and in non-smoking women. With heavy exercise, there is a risk of competition for blood supply between skeletal muscles and placenta, increasing fetal hypoxia and risk of preterm labor.
For long stays (weeks to months) at high altitude, there is an increased risk of preeclampsia, placental abruption, fetal death, and intrauterine growth restriction. Frequent checking of blood pressure, urinary protein, ultrasound and Doppler monitoring is highly recommended after 20 weeks.
Reference: Medical recommendations for women going to altitude: a medical commission UIAA consensus paper. Dominique Jean, Conxita Leal, Susi Kriemler, Heleen Meijer, Lorna Moore. High Altitude Medicine and Biology, 2005; 6: 22-31.

Children going to the mountains

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Healthy children can go to the mountains depending on their age and the parental knowledge of mountain environment and risks. Activities must be a pleasure for the child and adapted to age and fitness.
Specific altitude risks: there are very few studies in children and most recommendations are extrapolated from adult data. Because hypoxia may be harmful for brain development and growth in general, advice is usually more cautious for infants and young children, especially for long stays at high altitude.
The incidence of AMS is not higher in children than in adults, but diagnosis may be difficult: a modified Lake Louise score has been developed for young children, including fussiness, appetite, playfulness and difficulty sleeping.
The risk of HAPE is not higher in children resident at low altitude who travel to high altitude, compared to adults, but can be increased by intercurrent respiratory infections, which are common in young children. There are no data about the incidence of HACE in children.
Prevention of AMS follows the same rules as in adults: slow graded ascent and moderate activity are the most important. Treatment of AMS in children consists essentially of early descent; there are no studies with the drugs usually used in adults: however, they can be used if necessary with dosage adapted to body weight.
The risk of sudden infant death syndrome (below 1 year of life) at altitude is controversial, but justify to respect carefully the current recommendations: avoiding the prone sleeping position, overheating of the room and exposure to tobacco smoke, which are important cofactors.
Ear, nose and throat risks: risk of otalgia, or even otitis in case of pre-existing upper respiratory tract infection, is higher in infants with rapid changes in altitude and barometric pressure. They can be prevented by cleaning the nose before travel to avoid blocked nose, and sucking during ascent and descent by car. Cable cars are contra-indicated in sick children; the pressure changes are too rapid. Laryngitis and nose bleeding are common in winter ski resorts, because of dry air and overheated rooms. They can be prevented by humidification of the air.
Cold exposure: the risk of hypothermia is higher in children because of their large surface area to volume ratio. Adequate clothing is essential, including protection of the head with a cap. The use of baby-carriers is dangerous in winter: severe frostbites of the lower extremities have been reported after compression of femoral arteries.
Sun exposure: protection from solar ultraviolet radiation, which increases with altitude and on the snow, is essential in children, by using appropriate sunscreen, sunglasses, and a hat.

Reference: Pollard A.J., Niermeyer S., and the international committee. Children at high altitude: an international consensus statement by an ad hoc committee of the international society for mountain medicine, March 12, 2001. High altitude medicine and biology, 2001; 2: 389-403.

First Aid Knowledge of Trekkers

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In alpine environment with perfect infrastructure (Zermatt / Switzerland) the victim of any emergency has to survive at least 30 minutes until organized rescue services are available on scene. During this period he/she is completely dependent on the First Aid (FA) knowledge of the comrades. In a previous investigation (T.Küpper et al., Recuscitation 58(2): 159-169 (2003)) we found significant lack of FA knowledge of the climbers in the western Alps. The results were used to suggest a target group specific FA training curriculum.
With a similar approach and goal the ADEMED expedition (Aachen Dental and Medical Expedition) 2008 investigated the FA knowledge of trekkers on the Annapurna cirquit (Manang, about 3,500m; Nepal). The previously used standardised questionnaire was slightly adopted for trekking specific purposes. All trekkers passing the study site and willing to join the study were included. The design was proved by the ethical commission of Salzburg University (Austria). For evaluation descriptive statistical methods were used.
We report the preliminary results of 520 evaluated datasets with special regard to those topics of FA knowledge, which can be easily acquired by the trekkers. Details about the collective are also given.

Cough and Dyspnoea of an Asthmatic Patient at Mt. Kilimanjaro - A Difficult Differential Diagnosis

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Under field conditions the diagnosis of altitude-related disorders regularly causes problems even for doctors, especially if pre-existing conditions must be taken into account. With a very rare case we highlight the problems and develop a concept for differential diagnosis.
A 58-year-old man with child-onset allergic asthma developed dyspnoea and an acute non-productive cough during a trekking expedition on Mount Kilimanjaro (5,895 m) in Tanzania. The symptoms were initially, and logically, thought to be linked to the high altitude exposure (high altitude pulmonary edema (HAPE) or high altitude cough) or his pre-existing asthma. He was, however, correctly diagnosed later with a reinfection by Bordetella pertussis. Pertussis is a highly infectious disease with potentially serious medical consequences that could have affected all of the expedition members.
Patients with a respiratory disease who are planning a trekking expedition to high altitudes should be cautioned to ascend slowly to prevent the onset of known altitude-linked diseases that would adversely affect their breathing and to bring all their pulmonary medications. As the effectiveness of a pertussis vaccine declines four to 12 years after the vaccination, it is suggested that the status of immunization against pertussis should be checked together with those of other infections important for travelling well before departure. If the vaccination was performed >12 years before or the patient reports a pertussis infection in his/hers history, he/she should be vaccinated again before the expedition.
This case highlights the difficulties in the differential diagnosis of pulmonary symptoms in patients with pre-existing diseases and in extreme environmental conditions. This patient's Bordetella pertussis symptoms were atypical, and lacked the distinctive 'whooping' cough. We have therefore summarized the common and more rare differential diagnoses of HAPE to facilitate this diagnosis.

Risk Management at Trekking

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Although the situation may have improved since Shlim and Galle published their data with a risk of organized trekkers for fatal outcomes increased by 2.4x compared to individual trekkers, risk assessment and risk management is still an important part of responsible trekking. Unfortunately there is a widespread lack of proper risk management, e.g. sown by an incidence of acute mountain sickness of 50 84%, caused by too fast ascents. Based on previous pilot studies at the Khumbu region (Nepal) and on the risk management preached by the leading German trekking operators a survey was performed by two partial standardised questionnaires, one for organized or individual trekkers each, by the ADEMED Expedition 2008 (Aachen Dental and Medical Expedition). The study site was Manang (about 3,500m; Annapurna region, Nepal). All trekkers passing the study site and willing to join the study were included. The design was proved by the ethical commission of Salzburg University (Austria). For evaluation descriptive statistical methods were used.
We report the preliminary results of 520 evaluated datasets with special regard to those topics of risk management, which can be easily realized either by the organizations or by the individuals. Details about the collective are also given.

Drugs in Extreme Environments

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Drugs in mountaineering must regularly cope with harsh climates, but data about their use after freezing or exposure to high temperatures are limited. Subfreezing temperatures often need alternative routes of drug application.
We give an overview about the actual knowledge with special focus on emergency drugs, summarized from an extensive literature research and personal communication with the departments for drug safety of several producers.
Most drugs can be used after temperature stress of limited duration (freezing or +60° for some hours). Nevertheless, we recommend replacing them at least once per year or after extreme heat.
With increasing mobility of modern societies and more and more elderly people with their individual risk profile visiting high altitude, knowledge about drug use in extreme environments is of increasing importance for any physician dealing with mountains and health. We therefore suggest to add stability tests at +50°C, freezing, oscillating temperatures, and UV exposure to the actual International Congress of Harmonization Recommendations to simulate the storage of drugs at field conditions.

Dental Status and Dental Prophylaxis of Trekkers

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Dental emergencies, dental status and dental prophylaxis of trekkers are “no man's land of medical literature”. There is a nearly complete lack of data to advise people leaving civilization for longer treks.
ADEMED Expedition 2008 (Aachen Dental and Medical Expedition) investigated the actual dental status of trekkers and their dental prophylaxis before and during the Annapurna circuit. The study site was Manang (about 3,500m; Annapurna region, Nepal).

All trekkers passing the study site and willing to join the study were included. The design was proved by the ethical commission of Salzburg University (Austria). For evaluation descriptive statistical methods were used. We report the preliminary results of 380 evaluated datasets with special regard to those topics, which can be easily realized the trekkers. Details about the collective are also given.

Injury-risk evaluation in water ice climbing

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Introduction: Ice-climbing is widely considered to be a hazardous sport with a high risk of accidents and injury. To date, there has been no scientific analysis to characterize and reveal the prevalence of injury in this sport. The purpose of this study was to quantify and rate ice-climbing injuries.
Methods: 88 ice-climbers (water ice) (13 female, 75 male, mean age 34.6 years) from nine countries completed a comprehensive questionnaire on ice-climbing accidents and injuries, climbing frequency and risk behavior. Ice-climbing hours were quantified and injuries rated according to the NACA (National Advisory Committee for Aeronautics) score. To enable comparison to other sports, the injury risk was calculated per 1000 hours of participation in a given sport.
Results: Seventeen athletes (19%) reported a total of 35 overuse syndromes resulting from ice-climbing. Ninety-five injuries were retrospectively reported for a consecutive 3-year period. The incidence and respective grading of the injuries were: 67 for NACA 1, 24 for NACA 2, and 4 for NACA 3. Most injuries were open wounds (55.2%) and haematomas (21.9%). These injuries occurred 61.3% of the time while lead climbing, 23.8% while following and the rest during belaying and on the ascent or descent. The incidence of overuse injury syndromes was 0.77/1000 hours of sports participation. The injury incidence was 4.07/1000hr for NACA 1-3 with 2.87/1000hr in NACA 1, and none in NACA 4-7. Injury risk was correlated significantly with BMI ($p<0.05$), overuse syndromes correlated significantly with training hours ($p<0.01$), ice-climbing level ($p<0.01$) and the risk willingness while lead climbing on ice ($p<0.01$).
Conclusion: Contrary to the popular perception, our study demonstrated that ice-climbing is not a sport with a high risk of injury. All NACA I injuries are of minor medical relevance and would normally not need special treatment or a doctor's attendance. The results of injury risk per 1000 hours of participation in ice-climbing was comparable to that of indoor competition climbing (3.1/1000 hours) and to other outdoor sports (hiking, mountain biking, kayaking); the injury risk was also much less than a standard sport e.g. 'soccer' with 30.3/1000 hours injuries in competitions and 6.5/1000 hours in training.

Who is fit for Rescue Operations at Altitude?

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Objectives: With decreasing work capacity at altitude rescue operations demand a high level of fitness, but up to now data are missing. The workload of typical rescue procedures at different altitudes was measured and correlated to standard spiroergometry to enable a prediction whether a person will be able to perform comrade or organized rescue at altitude.

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Methods: The following parameters of 16 probands (5 females / 11 males; 31.1 years old (+/-9.6); body mass index 22.6 +/-9.9) were measured with a telemetric system (Cosmed K4) during typical rescue procedures: ventilation, respiratory frequency, tidal volume, oxygen uptake, exspired carbon dioxide, and heart rate. The same telemetric system was used for standard bicycle spiroergometry, which was combined with Borg's scale of perceived exertion and serum lactate concentration. The same setting was performed at three different altitudes: sea level, 3,000 m and at 4,559 m. Data from rescue activities were correlated to those from spiroergometry.
Results: Cardiac resuscitation causes pulse frequencies of 109.9 /min. (+/-12.6) at sea level, 116.4/min. (+/-19.1) at 3,000m, and 129.9 /min. (+/-51.6) at 4,559m. All data indicated that this was possible for all subjects within the range of aerobic endurance. In contrast all the other rescue operations (different techniques of patient transport, pulley rescue from crevasses…) are extremely demanding at altitude and even high trained subjects reached their individual limits of performance. Linear correlations were between 0.968 and 0.999 except for serum lactate (non-linear correlated!) and Borg's scale.
The work capacity necessary to manage rescue at altitude depends partially on theoretical considerations: If the prediction covers a safe management of 80% of the rescue situations by the individual or by 80% of the individuals checked, the minimal workload corresponds to mean value + 0.85 * Sx (90%: mean + 1.65 * Sx). Our data indicate, that a PWC170 of 3. 4.0 W/kg body weight at sea level is necessary to manage rescue at high altitude. Details will be given at the lecture.
Conclusions: The demand of 3.5 4.0 W/kg body weight is a training level well above the standard population (2.0 2.5 W/kg in Germany). Any person involved in organized rescue operations should be advised to maintain a perfect endurance training for the whole season. Medical preconditions which limit performance are not acceptable for crews of alpine rescue. In contrast to organized rescue, where the number of rescuers is limited (e.g. winch operations), mountaineers may act tactically: the group size should be 4 or more if the training level is below 3.0 W/kg body weight (PWC170). This enables persons to perform safe mountaineering even in case of limiting medical preconditions. But it should be taken into account that comrade rescue with a work capacity of <2.5 W/kg body weight may be impossible.

Climbing pharmacies? Some Personal Notes on Drugs and Doping in Mountaineering

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Background: At some of the world's mountains climbers who don't take any drugs are the absolute minority. At Barafu Bivouac (Mt. Kilimanjaro) 46.7% took diamox, 40.0% dexamethasone, 4.3% coca leafs, and 8.8% were "clean" (Kuepper T, unpublished data). In 1993 Röggla et al. reported a quota of amphetamine-positive mountaineers of 7.1% above 3,300m and of 2.7% at 2,500-3,300m. Trekking organisations recommend the use of several "prophylactic" drugs to 38.9% of their clients (RIMAT-1 study, Silver Pyramid Expedition 2001). Actually we evaluate the RIMAT-2 data from ADEMED Expedition 2008. A myriad of drugs and methods is in discussion, and at least some of them enhance performance which fulfils the WADA definition of doping. A special problem here is the use of oxygen, which clearly enhances performance at high altitude.
The topic may be as old as modern mountaineering, since many celebrated ascents of the 50's and 60's were done with the use of Captagon (fenetyllin, an amphetamine) and other drugs. Details will be given and the problem will be discussed with special regard to the doping problem.
Conclusions: There is a serious problem in mountaineering for sure in international trekking and high altitude climbing, possibly also in alpine mountaineering. Mountaineering clubs and societies should publish clear statements against any use of drugs at altitude except for people with individual health risks (pre-existing diseases) or for therapy. Additionally they and any "clean" mountaineer should try as much as possible to stop the misuse of drugs in the mountains.

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Noise exposure during alpine helicopter rescue operations a comparison of different helicopter types

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During helicopter rescue operation the medical personnel is on high risk of hearing damage by noise exposure. There are two important factors to be taken into account: The extreme variability with some days involving no exposure but others with high exposure. Second, the extreme noise levels during work outside the helicopter. We estimate the noise exposure of the personnel for different helicopter types used during rescue operations in the Alps and in other regions of the world.
The rescue operations of one year of four rescue bases in the Alps (Raron and Zermatt in Switzerland; Landeck and Innsbruck in Austria, n = 2,731) were analyzed for duration and kind of noise exposure. Then noise levels were measured at defined points inside and outside the different aircrafts. The setting is according to the European standard (Richtlinie 2003/10/EG Amtsblatt) and to Class 2 DIN / EN 61672-1. With both data sets the equivalent noise level L_{eq8h} was calculated.
For better comparison it was assumed that all rescue operations were performed with a specific type of helicopter. Then model calculations for noise exposure by different helicopter types, such as Alouette IIIb, Alouette II “Lama”, Ecureuil AS350, Bell UH1D, Eurocopter EC135 were performed.
Depending on modern technologies (e.g. Eurocopter's Fenestron®) the situation for the personnel has been improved. Nevertheless noise prevention, especially noise intermissions in spare time, is essential. Medical checks of the crews by occupational medicine (e.g. “G20” in Germany) are still indicated. Details about the noise exposure will be given.

A Verification of The Pilot Study Named “JSMM Health Evaluation Network for Mountaineers” between October 2006 and March 2008

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ABSTRACT. We reported the start of pilot study of “JSMM Health Evaluation Network for Mountaineers” before. In the pilot study, travelers who were going to join the high altitude mountaineering or trekking planed by the tour agencies, undergoes medical health check formatted by this network. At the health check, health status and risk for the tour were judged. To verify the meaning of this network, the outline and the judgment of clients, and tour participation were investigated.
From October 2006 to March 2008, 334(male; 184, female; 150, mean age; 61.5) clients were carried out the health check. In the judgment of health status, 80(24.0%), 224(67.1%), 30(9.0%), 0(0.0%) clients were excellent, good, fair, poor, respectively. Also 266(79.6%), 65(19.5%), 3(0.9%) clients were judged low, intermediate, high risk, respectively.
The clients of 2 were abandoned to join the tour, because of disease or possibility of disease which were pointed out at the health check. Over more, 6 clients not included these 334 were excluded from this health check, as they need treatment for the patients, and they also did not join the tour. Whereas, the clients of 332 joined the tour, and most of the clients, 330 were finished tour without health trouble. In these 330, 5 were recommended to cancel the participation but 3 of 5 joined the tour with recognition of risk. While, the clients of 2 judged good-low had troubles during the tour. One was evacuated by the helicopter, because of high altitude pulmonary edema (HAPE). The other one was died for HAPE or HAPE and another disease.
Total 8 clients of 340(2.4%) were canceled the tour as the result of health check. And except HAPE, major event was none. These suggest the significance of this pilot study. However the problems are still presenting. Therefore, continuation and improvement of the pilot study is needed.

Záchrana z nedostupného terénu pomocou vrtuľníka A109K2 a spôsob financovania

Author: MUDr. Iveta Križalkovičová
Institutions: Letecká záchranná zdravotná služba, Letisko Poprad-Tatry, a.s., Air Transport Europe, s.r.o., Slovak Republic

Evakuácia z nedostupného terénu sa realizuje po pristátí vrtuľníka alebo špeciálnou záchrannou činnosťou. Špeciálna záchranná činnosť je súhrn postupov vysadenia záchranára do terénu alebo jeho evakuácie a evakuácie zachraňovaného za situácie, kedy nie je možné pristátie vrtuľníka. Vysadenie záchranára do terénu je možné použitím závesu, podvesu alebo palubného navijaku. Ako prostriedky na evakuáciu zachraňovaného sa používajú horizontálna sieť, vákuový sak alebo evakuačná sedačka. Jednotlivé prostriedky sa používajú s ohľadom na terén, charakter poranení zachraňovaného a meteorologickú situáciu. Financovanie leteckej záchrany pre občanov štátov európskej únie je realizované zo zdrojov verejného zdravotného poistenia príslušnej krajiny. Jedinou podmienkou je mať Európsky preukaz zdravotného poistenia, ktorý vydáva príslušná zdravotná poisťovňa. Občania z krajín mimo EÚ sú povinní si uzavrieť v prípade pohybu vo vysokohorskom prostredí cestovné poistenie, z ktorého bude financovaná ich prípadná záchrana. Ďalšou možnosťou je vlastniť Kartu darcu. Darcovi, ktorému sa náhle zhorší zdravotný stav alebo utrpí úraz, pričom jeho stav bude vyžadovať poskytnutie zdravotnej starostlivosti, bude poskytnutá pomoc a to aj v prípade ak zdravotný stav darcu nebude zdravotnou poisťovňou pre poskytnutie takejto služby indikovaný.

Náhlá smrt, prevence

Author: MUDr.Igor Hermann
Institution: Kardiologická a sportovní poradna,Ústí nad Orlicí.

Autor seznamuje s nálezem závažné arytmie u 52 - letého sportovce, který přišel z vlastního zájmu do sportovní poradny ke zjištění výkonnosti. Subjektivně nepociťoval zdravotní problém. Podrobnou anamnézou byl zjištěn výskyt synkopy při běhu. Na sporttesteru při běhu zachycena tachykardie až 240/min. s pocitem únavy a slabosti.
Objektivní fyzikální nález byl normální. Na klidovém ekg záznamu byl nález SA blokády, známky hypertrofie LK (Sokolov 38 mm). Echokardiografické vyšetření s normální funkcí všech chlopní, bez známek kardiomyopatie. EF 72 %. Při následné ergometrii se zátěží do 190W s TF 180/min. s limitními hodnotami TK 240/110 je na ekg záchyt supraventrikulárních extrasystol, supraventrikulární tachykardie 250/min, i krátký paroxysmus komorové tachykardie.
Při 24 hod.monitorování ekg k dosavadním arytmiím přibyl nález komorových extrasystol a AV blokády II. stupně.
Dotyčný sportovec byl odeslán jako adept náhlého úmrtí do arytmologické poradny. Léčebně nasazen betablokátor, byl implantován kardiostimulátor.
Subj. je nyní bez potíží, sportuje bez omezení. Při kontrole zachyceny velice krátké běhy komorové tachykardie, které se oběhově neuplatňují.
Uvedený případ zdůrazňuje nutnost kvalitního vyšetření u tělovýchovného lékaře, nejlépe se zátěžovým testem před plánovanou cestou do hor.

Nové přístupy v léčbě omrzlin aneb ty věčné omrzliny

Author: MUDr.Jaroslava Říhová
Institution: Ústav tělovýchovného lékařství VFN, Praha 2, Salmovská 5

Autorka seznamuje s novými léčebnými přístupy v léčbě omrzlin v souladu s aktuální světovou literaturou. Klade důraz na bezodkladné zahájení laické léčby omrzlin v terénu, při níž lze s výhodou kromě acylpyrinu využít přípravky pro systémovou enzymoterapii. Ty poskytují efekt protiotokový, protizánětlivý, antiagregační, fibrinolytický a analgetický. Léčba musí být komplexní, dlouhodobá, s přihlédnutím ke stadiu omrzliny. V určení diagnostického a léčebného postupu lze s výhodou využít francouzské klasifikace omrzlin dle Cauchy et al.
V klasifikaci nám pomáhá časně provedená scintigrafie kostí 2. a 8. den od počátku omrzliny pomocí Te 99. Pokud nehrozí sepse, mělo by se za komplexní léčby počkat na demarkaci tkání, ke které dochází 30. až 45 . den, intenzivní léčba zlepšuje viabilitu tkání, které mohou být zachovány. Porovnává vlastní zkušenosti se zkušenostmi zahraničních autorů, konstatuje, že základní lékové skupiny se shodují (aspirin, NSA, vasodilatační léky, prostaglandiny, enzymy, heparin, hemodiluce, dextran, analgetika, antibiotika, oxygenoterapie, desinfekce, péče o chronickou ránu s preferencí vlhkého krytí). Nadále je nejlépe omrzlinám předcházet.
Odkaz na webové stránky : www.horska-medicina.cz (bulletin 2006, 2007)

Wobenzym (nejen) v léčbě omrzlin

MUDr. Marta Honzíková

Přípravky pro systémovou enzymoterapii (Wobenzym a Phlogenzym) jsou v ČR registrovány od devadesátých let. Jejich hlavními účinnými složkami jsou proteolytické enzymy (trypsin, chymotrypsin, bromelain, papain) a flavonoid rutin. Sportovní medicína je patrně oborem, kde má užívání těchto léků nejdelší tradici. Vzhledem k tomu, že mají velmi dobrý protiotokový efekt, zrychlují vstřebávání hematomů, působí analgeticky a zkracují dobu hojení, jsou vhodným lékem pro akutní poúrazové stavy, které se mohou vyskytnout v horském terénu.
Tyto léky mají také pozitivní vliv na reologické vlastnosti krve (antiagregační a fibrinolytický efekt), čímž zlepšují mikrocirkulaci a působí také protizánětlivě. Navíc patří přípravky pro systémovou enzymoterapii k volně prodejným lékům bez omezujících kontraindikací. To vše z nich činí ideální prostředky pro bezodkladné zahájení laické léčby omrzlin v terénu, které může rozhodujícím způsobem ovlivnit prognózu chladového poškození.
Nabízí se i otázka jejich profylaktického užívání v exponovaných podmínkách (horolezci při déle trvajícím pobytu ve vysokohorském prostředí).
Phlogenzym s vyšším obsahem vybraných účinných látek, který lze podávat v nižších dávkách, se jeví jako vhodnější pro akutní stavy v terénu.

Hibler´s pack in the treatment of hypothermia - poster

Ladislav Sieger
ČVUT-FEL, Technická 2, 166 27 Praha 6

Abstrakt
Hiblerův zábal je mnohdy optimální forma dodání tepla podchlazenému v nouzových podmínkách, když není k dispozici specializovaná lékařská pomoc. Poster ukazuje na praktickém příkladu jak Hiblerův zábal vypadá a jaké je jeho správné použití. Upozorňuje na zdravotní rizika při jeho nesprávné aplikaci.

Metody úpravy vody pro individuální použití - poster

Ladislav Sieger
ČVUT-FEL, Technická 2, 166 27 Praha 6

Abstrakt
Poster shrnuje fyzikální a chemické metody úpravy vody pro individuální použití. Z fyzikálních metod se věnuje především filtraci a tepelné sterilizaci v nouzových podmínkách a významu termosky pro tepelnou sterilizaci vody. U chemických metod pak použití jodu a chloru. Rozebírá potřebné dávkování a možnosti alternativních přístupů při chemické sterilizaci vody. Všímá si vhodnosti použití a omezení jednotlivých metod ošetření vody.

Course and treatment of hypothermia

Ladislav Sieger
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Abstrakt
Podchlazení jsou vystavěni lidé nejen při práci v polárních oblastech. Při středním a těžkém stupni je třeba již lékařské péče. Článek se zabývá rozdělením podchlazení podle teploty tělesného jádra a typickými průběhy teploty tělesného jádra při prochládání. Průběhy teploty jsou výsledky řady praktických experimentů. Sledovanou osobou byl muž 44 let, 76 kg, 175 cm vysoký. Byly provedeny experimenty s podchlazením ve vodě 12°C a 16°C po dobu 2 hodin. Následovalo pasivní rozehřívání jen za pomocí bazálního metabolismu. Byla simulována situace podchlazení v horách, kdy není možné rozehřát podchlazeného na specializovaném medicínském pracovišti a nepřichází v úvahu ani použití alternativních metod (horké balíčky, Hiblerův zábal…). Sledovaná osoba byla zabalena do spacího pytle a tepelně odizolována od okolí. Nejnižší teplota tělesného jádra (rektální) byla 34,7°C. K návratu na teplotu 36,6°C došlo vždy až za 7-8 hodin pobytu ve spacím pytli. Bylo ukázáno, že ani 15 minutové cvičení (běh do schodů, dřepy), kdy stoupla tepová frekvence na 140 tepů za minutu neurychlilo rozehřátí organismu, protože energie, která se uvolnila tělesným cvičením byla nedostatečná pro rozehřátí podchlazeného organismu.

Průběh podchlazení po několika hodinovém pobytu ve vodě 4°C teplé

Ladislav Sieger
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Abstrakt
Součástí referátu je video, na kterém je zdokumentován průběh těžkého stupně podchlazení jeskyňáře, ke kterému došlo po 6tihodinovém pobytu ve vodě 4°C teplé. Bylo to na expedici mimo civilizaci. Po 6 hodinovém pobytu v jeskyni jej kolegové ve stavu silného podchlazení vynesli na povrch. Nebyl schopen se sám postavit, jen vydával neartikulované zvuky. Byl transportován zhruba 800m do místa, kde čekalo auto. Za 2-3 hodiny se dostal do místa ošetření. Fyziologické hodnoty (tlak, tep, teplota…) nebyly měřeny. Byl převlečen do suchého a uložen do spacáku spolu se dvěmi PET lahvemi s vodou o teplotě 50°C. Po 9ti hodinách spánku byl oblečen a podáván čaj. Video zobrazuje právě tento okamžik. Je vidět, že reakce jsou zpomalené. Třese se chladem přestože venku je okolo 22°C a svítí slunce. Není schopen artikulovat pouze reaguje pokynutím hlavy. Zorničky nereagují na prudké osvětlení, při pití čaje po lžičkách dochází k aspiraci čaje do plic. Vykašlávání následuje až se zpožděním okolo 3 sekund. Není schopen na pokyn sám zdvihnout ruku a je nestabilní. V sedě je třeba jej přidržovat jinak padá. Po 2 hodinách bdělého stavu opět usíná na 24 hodin. Teprve koncem třetího dne začal komunikovat, čtvrtý den spontánně jedl a pil. Po návratu z expedice bez zdravotních problémů.

Hiblerův zábal v praxi

Ladislav Sieger
ČVUT-FEL, Technická 2, 166 27 Praha 6

Abstrakt
Bylo provedeno monitorování plavce při tréninku o délce 40 minut ve vodě 1,5°C a teplotě vzduchu 3°C. Monitorovanou osobou byla žena 42 let, 86 kg, 160cm, BMI 32 kg m^{-2}. Kontinuálně byla měřena rektální teplota v minutových intervalech s přesností 0,1°C a tepová frekvence. Následně byl aplikován Hiblerův zábal. Počáteční teplota jádra před vstupem do vody byla 37,2°C, nejnižší teplota jádra 32,4°C a teplota nohou 1,8°C. Délka rozehřívání pomocí Hiblerova zábalu byla 2 hodiny a bylo spotřebováno 8 litrů vody o teplotě 80°C.
Po 1 hodině se plavkyně posadila a byl jí podán horký sladký čaj 0,3 litru. Dřív jej odmítala. Po 3 hodinách od výstupu z vody odcházela plavkyně domů s rektální teplotou 37°C a byla dále monitorována. Celková délka monitorování průběhu teploty byla 5 hodin. Podobné tréninky běžně prováděla bez použití Hiblerova zábalu či jiných specielních způsobů rozehřívání.

Úprava vody v praxi - workshop

Ladislav Sieger
ČVUT-FEL, Technická 2, 166 27 Praha 6

Ukázky nouzové úpravy vody v praxi.

- Vysvětlen a demonstrován význam termosky pro tepelnou sterilizaci vody
- Tepelná sterilizace vody pomocí PET lahve či camelbacku
- Filtrace pomocí improvizovaného tlakového filtru vyrobeného z PET lahve
- Úprava vody pomocí jodové tinktury, povidon, betadin
- Chlor a sterilizace vody. Běžně dostupné prostředky, deriváty kyseliny izokyanurové a kde je najdu v drogerii
- Jak odhadnout koncentraci chloru čichem
- Demonstrace pomocí testeru koncentrace chloru ve vodě
- Dechlorace prostředky z naší cestovní lékárničky
- Improvizovaná výroba chloru pomocí hrnečku, tužky a čelové svítilny

Advanced life support by a two-member team: how to organize initial care at the scene?

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Introduction

The guidelines for resuscitation define clearly how to perform ALS.[1] However, their implementation in real-life situations often causes difficulties even to teams of experienced healthcare professionals.[2] The Helicopter Emergency Medical Service (HEMS) can be dispatched to patients with cardiac arrest to shorten response time in certain situations. Medical teams in helicopters consist of only two members (a physician and a paramedic) who have to cope with a complicated initial phase of ALS, wherein many procedures must be completed in a short period of time. We present a modified two-rescuer ALS algorithm which was developed to improve its effectiveness.

Methods

Since 2005 two-rescuer ALS training using manikins has been compulsory for all HEMS crew members. Minimized interruptions to chest compressions are of the highest priority. A short instructional DVD-video “ALS for HEMS crew” resulted from the training and has been used to keep the sequence of actions better in mind.

Results

Achieved timing of procedures (adult VF algorithm): 00:00, chest compressions; 00:20, bag-mask ventilation; 00:50, intubation; 01:20, mechanical ventilation (FiO_2 1,0); 02:50, defibrillation; 03:30, IV access.

Discussion

ALS is started with a recommended compression:ventilation ratio of 30:2. Over-the-head CPR (OTH-CPR) is used in this phase as the best available method for one healthcare professional, who must carry on chest compressions and bag-mask ventilation, while the second rescuer performs additional tasks.[3] The effectiveness of OTH-CPR does not differ from compressions given from the patient's side.[4,5]

Conclusion

The use of ALS procedures by two-member crews requires regular training using manikins. In the modified algorithm an emergency physician performs chest compressions from the over-the-head position during the initial phase of CPR while a paramedic is engaged with other necessary activities. OTH-CPR should be acknowledged in the new ERC guidelines as an effective alternative when CPR has to be temporarily provided by a single healthcare professional.

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Bird strikes in helicopter emergency medical service: safety recommendations

Anatolij Truhlar [1], Vaclav Vacek [2], Jan Velicka [2]

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Introduction

Wildlife strikes cause over 12 000 accidents and 500 mil. USD in damage to the U. S. aviation annually. Flight safety organizations suppose that 80% of bird strikes to civil aircrafts go unreported. According to the ICAO and FAA, 90% of bird strikes happen during take-off and landing (bird airspace): only 8% of collisions occur above 900 m (3000 ft) but 61% occur at less then 30 m (100 ft). The fixed-wing aircrafts are especially at risk because of their speed giving birds less time to react.

Nevertheless, helicopters flying at very low altitudes are not out of danger, although collisions to rotary-wing aircrafts are very rare. The impact energy increases with the square of the speed difference. In case a windshield is destructed, a risk of serious injury to the crew is very high.

Case report

We report a case of a bird strike to EC-135 which happened in 2005. The HEMS crew was dispatched to a small hospital in the Giant Mountains to transport a patient with septic shock. Shortly before landing at Vrchlabi helipad, the helicopter hit a buzzard flying at 200 m (660 ft). Subsequent failure of the windshield, electrical short-circuit in the cockpit and a pilot´s head injury required emergency landing.

Recommendations

- Avoid bird migratory routes and densely populated areas;
- choose flight altitude over 900 m (3000 ft) if possible;
- reduce speed during approach and low altitude flight;
- keep landing lights switched on;
- clear the bird´s way upwards (do not underfly them);
- wear a helmet and protect your eyes with a shield;
- fly HEMS missions in a 2-member flight crew if possible;
- in case of collision do not panic and “fly the aircraft”;
- learn to manage emergencies in simulators;
- ask manufacturers for safety materials and higher “bird resistance”.

Conclusion

Although a risk of bird strikes remains statistically low in helicopter operations, the HEMS crews should follow basic instructions to reduce wildlife hazard which can even cause a fatal accident.

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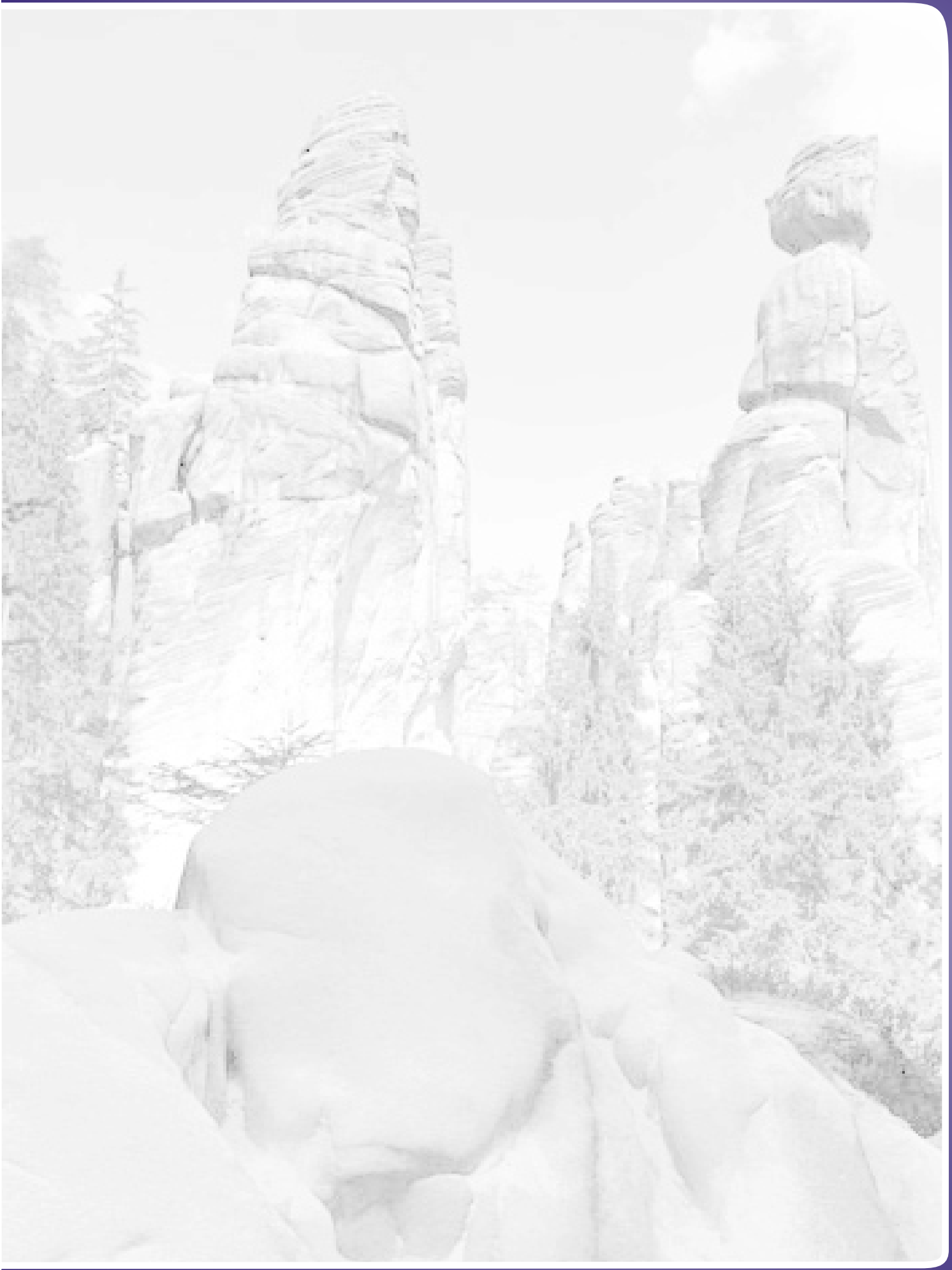

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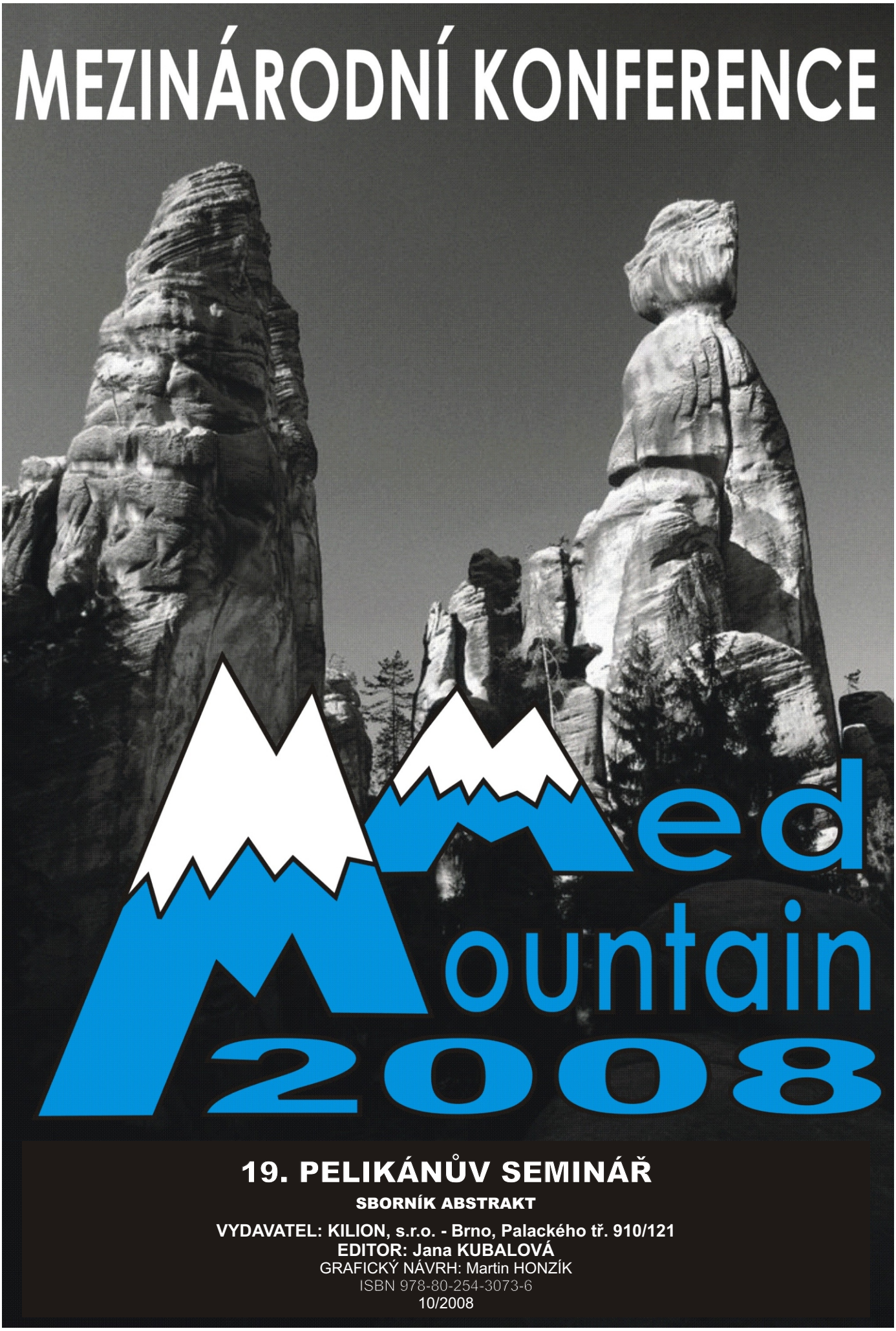

Med Mountain 2008

19. PELIKÁNŮV SEMINÁŘ

SBORNÍK ABSTRAKT

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