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TEACHING THERMAL TRAUMA TREATMENT

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The significance of the item connected with a frequency of burns and severe consequences in all the countries and have no tendency to decrease(2). Virtually placing a student in a situation of various physicians on a stages of burns we can obtain the notion of step by step treatment of the pathology(3).

Burns, urgent professional help, surgical and therapeutic activities

Burn – the irreversible damage (necroses) of tissue as result of high temperature application.

The difference is the depth of necrose: I – epidermis (red, oedema and pain), II – derma (red, pale deepithelialized surface) and III – derma + adventives and deeper tissues. For us, as soon as we are physicians, the main difference is between I, II – superficial – (can be skin over itself). And III – deep burn scab (after debridement, heal only by means of operation - auto skin plastics).

Etiology. Its logical to represent it according the age. And so are perinatal burns – iatrogenic, by unproper warming «hot water bottles», infra-red irradiators. Then its bath, from 1 to 18 months – during eating (feeding). Beginning 3 years till 60 - males burn more often. 3-5 years electric burns – local like 2 fingers of a hand. If two hands, hand-leg etc. – it's general electric struck – we must check cordial rhythm (no less than for a minute) better E.C.G., check general neurological symptoms – organize propriate medical care and medical transport-hospitalization according the leading symptoms – neurological, cardio- or intensive care units for 48-72 hours observation and correction. Another case is short circuit flash – generally burns of hands, face and retina! Explosion – mostly the uncovered surfaces and respiratory tract! Specific are the vacuum explosions (like bombs used in Beirut in 60-70-s and gas nearby Ufa – Ulu-Telyak 1989) that causes micro ruptures of solid tissue – brain, liver, kidney cortex with a corresponding clinical consequences.

For physicians, the main characteristics is the area of burned surface. Adults – 15% it's shock! Under 15 years old – 10%, under 3 years 5% of burned surface causes shock (2). Smaller square of burns can also cause shock in cases of deeper burns and specific areas like face, perineum, armpit. Treatment: rehydration ($V_{ml} = S\% \times M_{kg} \times K$ (where V- first day volume i/v.; S- % of burned area; M – weight of patient; K – coefficient, correlated with clinically level of shock: 1-compensated, 2-subcompensated, 3-decompensated. Second and third day of shock 1\2-2\3 in ratio for the 1 day of shock; the main guide is arterial pressure stabilization, appropriate diuresis (according age).

Online (or face to face): every student receives one question from the offered list and either prepare and announce it during the lesson in a clinic or send on line. In this article data is the reference to the lecture – the main resource for the students to answer.

1. THERMAL INJURY

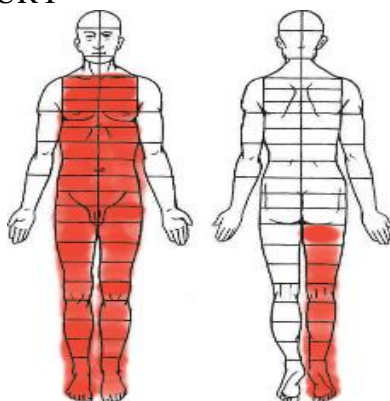


Fig.1. the Dolinin's scheme for estimating the square of burned surface, every part=1% of body surface

BURNS

1. First aid:

- definition (burn is...)
- first aid- algorithm in a city (15-60 min. until ambulance arrival) in Ufa;
- algorithm in the country «24 hours from professional med/aid»

2. Ambulance: topical - the wound dressing and i\|v treatment.

3. Surgeon № 1: period of SHOCK - the first surgical manipulations, necrotomy, bondages. TOXEMIA – early radical excision.)

4. Intensive care physician-prescriptions for trained nurse

$$V_{ml} = S\% \times M_{kg} \times K$$

V – the volume of i\|v infusion for the first day of shock;

S – area of the burn surface %;

M – the weight of the patient kg;

K – coefficient correlating with a clinical degree of shock – (compensated-1; subcompensated-2 or decompensated-3) coefficient correlated with the degree of burn shock: I-light (compensated), II-severe (subcompensated), III-extremely severe.

5. Surgen № 2: SEPTICOTOXEMIA – bondages, chemical necrectomia; autodermodermy by free, split, perforated transplants, specific immobilization of burned extremities; bondages with topical stimulators of reparation.

6. Therapeutist - treatment of burned patients: «Kurling ulcers» (prophylaxis and drug treatment); press dressing, physiotherapeutics and balneology of cicatrix restrictions - data and technics of operations.

7. Mass, cluster trauma – index by Frank sorting.

8. Frost bite (Congelation) – definition, treatment: method by Golomidov; per arteria perfusion

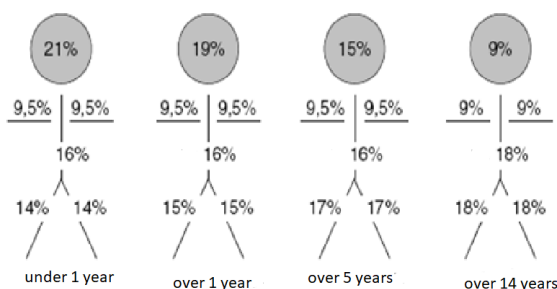


Fig.2. Lund Browder scheme

After 3 days 15-21 days of toxemia (partially destroyed tissues toxins absorb) – treatment per vein desintoxication. Radically can be improved by debridement. Operation must be performed by combustiologist on 4th-20th day burns disease. Caution! Debridement of 10% surface cause blood loss about 2 liters and, vital, pain nerves are concentrated in derma.

If the treatment conservative the main goal is to dry necrosis thus restricting intoxication and suppuration. The latter will appear inevitably – it means the beginning of septicotaxemia. Treatment – desintoxication and antibacterial (antibiotic), this period demand restore of blood – one and only way – transfuse blood. Topically if not radical, then step by step removing following auto tearing-away. Frequent bandage anew with antiseptics in water soluble substances. When the puss is withdrawn the purpose will be to heal the defect of skin. Either conservative, +stimulation of regeneration, if the burn superficial. If not – the only way of treatment – autodermoplasty with a free(flat) autoskin graft. After that treatment aimed on stimulation of regeneration with a spare bandage. The contradiction is that to stop suppuration you must frequently anew bandages, but that causes damage of the wound tissues. You can overcome it using net-like non adhesive materials or biological temporary materials like xenotransplants. Methods of creating gnotobiotic, nonmicrobial area around the wound or the hole patient. Our experience make us believe - that is the future of antimicrobial surgery. As for antibacterial treatment, beside generally accepted, we believe in a selective decontamination methods aimed on restoration of patient's biocenosis(1).

It's important right from the beginning of reparation to consider a specific immobilization of burned area. The main idea is hypercorrection to prevent adductive contractures.

Nevertheless, a considerable amount of patients must be treated by physiotherapy (ultrasound, electrophoresis resolving ferments, KJ) balneology – hydrogen sulphide -like Macesta (Caucases) or Krasnousolsk (Bashkiria). Some cases need operation to restore adduction of extremities. The optimum time about a year.

Frost-bite

The irreversible damage of tissue as a result of local blood circulation failure owing to cool dawn. Frost-bites occurs while low temperature exposing extremities with improper dressing, tight boots and even can occur under positive temperature – “trench foot”. The optimum treatment of severe frostbites is per arterial implementation of saline, glucose solutions with preparations restoring peripheral blood circulation (like spasmolytics, heparin, aspizole, antioxydants, vitamins).

If you cannot carry out this scheme, apply the Golomidov's method – isolating frost-bite parts from outside warming, so that the warm would come only with blood fluid and oxygen.

Thus coworking professionally, we can improve the level of treatment and benefit the consequences of thermal injury.

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