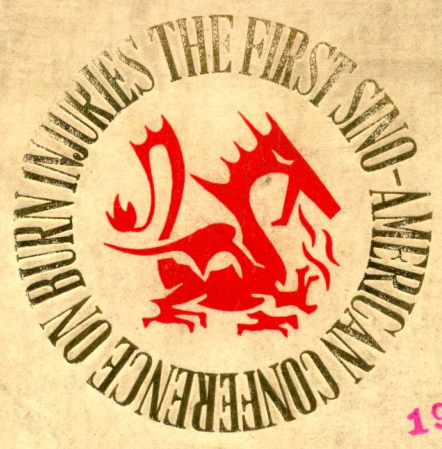

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Proceedings of The FIRST SINO-AMERICAN CONFERENCE ON BURN INJURIES

論文摘要

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ABSTRACTS I (1—42)

GENERAL ANALYSIS

PHYSIOLOGIC RESPONSES

INITIAL EVENTS

NURSING CARE

1. AN ANALYSIS OF 48.978 BURN CASES

Burn and Plastic Surgery Society, Medical Science and Technology Committee, CPLA

The general data from 48,978 burn cases collected from 16 institutes over a 22-year period (1958-1979) were analyzed. It was found that most of the victims were under the age of 30 years (78.1%). 22.9% of the cases were in the 20-24 years group, and 22.95% were in the under 5 years group. Thermal burns were the most common, accounting for 89.5% of the injuries. The female to male ratio was 1:3, as was the ratio of patients with third degree burns to those without. Most of the patients (85.10%) had TBSA burns of less than 30%. Cases with burns of more than 70% TBSA accounted for less than 3% of the total. The exposed areas of the body (i.e. head, neck, and limbs) were most commonly injured. The mean hospitalization period was 26.9 days. The overall mortality rate was 4.93% and the LA_{50} was 75.93% ($Y=7.5588-0.0337X$). The incidences of shock and sepsis were 10.85% and 7.95% respectively. It was also found that the mortality rate (in terms of LA_{50}) and incidences of both shock and sepsis have been lowered remarkably ($P<0.01$) since 1970. Finally, the correlation between age and LA_{50} was given by $Y=57.49+1.448X-0.025X^2$.

2. ANALYSIS OF 4,390 BURN CASES TREATED OVER A TWENTY-SEVEN YEAR PERIOD

Fang Zhi-yang, Xu Feng-xun, Ge Seng-de et al
Burn Unit, First Affiliated Hospital, Second Military Medical College, CPLA, Shanghai

During a 27-year-period, 4,390 burn cases were admitted to the authors' hospital. A general analysis of this group is as follows:

The highest incidence of burn injury occured during the summer months (33.1%) and before the age of 5 years (20.16%). The male to female ratio was 2.82 : 1. Thermal burns were the most common, accounting for 78.04% of the injuries seen. As for the extent of injury, 52.67% of the cases had only minor burns of less than 10% TBSA. Patients with burns of more than 70% TBSA accounted for less than 4% of the total. There were 162 deaths, which represents an overall mortality rate of 3.69%. The LA_{50} figures for both total and third degree burn areas in different age groups were as follows: Linear regression equation of probit analysis of burn area and mortality rate:

Age			
	0-14	y=0.0514x + 1.4078	LA50 =69.82
	15-44	y=0.0416x + 1.2173	LA_{50} = 89.65
	45-59	y=0.0552x + 2.8106	LA50 = 61.49
	60-	y=0.0550x + 2.2415	LA_{50} = 50.14

Linear regression equation of probit analysis of third degree burns and motality rate:

Age			
	0-14	y=0.0560x + 2.6405	LA50 = 42.09
	15-44	y=0.0343x + 2.8820	LA_{50} = 61.69
	45-59	y=0.0552x + 2.8106	LA_{50} = 39.67
	60-	y=0.0511x + 4.1244	LA50 = 17.13

3. EARLY EXCISION AND INTERMINGLED GRAFT TRANSPLANTATION IN TREATING VERY EXTENSIVE BURN

Shih Tsi-siang, Yang Chih-chun, Hsu Wei-shia

Burn Unit, Rui Jin Hospital, Shanghai Second Medical College, China

In order to solve the problem of how to permanently cover very extensive third degree burns, in 1963 we began to use large sheets of fenestrated allograft for immediate postexcision wound coverage, followed by insertion of small patches of autograft into the windows. Encouraging results were achieved with this method. Since 1972, the increasing demand for homologous skin has sometimes necessitated the use of fresh porcine skin as the fenestrated sheet. The technique for transplantation of fresh porcine and human skin is quite similar to that of intermingled allo- and autograft transplantation.

From 1966 to 1984 a total of 123 patients with burn areas of 80-100% TBSA (at least 50% TBSA third degree) were admitted to our unit. Of the 27 patients who were not subjected to excisional surgery, only 2 survived. This represents a non-operation mortality rate of 92.5%. On the other hand, 35 of the 96 patients who underwent excisional surgery followed by grafting survived. This represents a mortality rate of 63.5%. In the operated group, 66 of the patients underwent fenestrated allografting followed by autografting with a survival rate of 39.4%. 28 patients underwent fenestrated xenografting followed by allografting. Their survival rate was 25.0%. The average extent and severity of burn injury in the two groups was similar. Therefore, it appears that fresh allograft sheets are superior to fresh xenograft sheets in the coverage of very extensive burn wounds.

4. CHARACTERISTICS OF EXTENSIVE BURN CARE

Wang Chang-yeh, Chang Ming-liang, Tsao Ta-hsin, et al
Beijing Jishuitan Hospital

From January 1958 to December 1984, 156 cases of extensive burns (80% TBSA) were treatd. 84 of the patients died, representing an overall mortality rate of 53.9%. General conclusions based on our experiences are as follows:

1) Each patient should be individually cared for by a burn team.

2) Resuscitation should include infusion and respiratory tract management within 2 hours of injury.

3) During the shock stage, large amounts of colloid (up to about 25% of the total fluid replaced) should be administered.

4) Eschar excision followed by grafting should be performed within three weeks of injury.

5) Autografting or combined auto-homografting should be used to completely cover wound serfaces.

6) Silver sulphadiazine should be used topically.

7) Antibiotic therapy should be used only in cases exhibiting invasive, pulmonary, or systemic infection.

8) Environmental control and special nursing care are needed to prevent cross contamination.

Problems involved in the implementation of each of the above recommendations are discussed.

5. THE TREATMENT OF VERY EXTENSIVE FULL-THICKNESS BURNS

Tian Fu-quan*, Wang Jing-de**, et al

Heilongjiang Provincial Hospital and First Hospital of Daqing***

Ninety-three patients with full-thickness burns of more than 70% TBSA were treated at the authors' hospitals. of these 93, 15 were cured. The average burn area of the survivors was 87.6% TBSA, with 75.9% being full-thickness.

In all cases but one, early escharectomy was performed in stages. The mean of the excised areas was 43.5% (23%-63%) TBSA. Immediately following eschar excision, wound surfaces were covered with large sheets of either allograft or xenograft in which many small holes had been made. Small pieces of autogenous skin, usually harvested from the scalp area, were then inserted into the holes of the sheets. After grafting of the sheets, remaining eschars were gradually debrided and additonal autoskin and allo-skin graftings performed. On the average, all wound surfaces had healed by 65.3 day post-injury.

Follow-ups performed from 1-15 years after injury showed that 3 patients had resumed their previous work, 3 more were able to perform light work, and 5 were at least able to take care of themselves. Two patients required some assistance in their daily lives, and 2 others were in need of additional plastic and reconstructive surgery.

Experience has shown the importance of both the proper timing and extent of eschar excision. In addition, the sites of eschar excision and the appropriate employment of various grafting methods are also essential to effective treatment of such patients.

6. FACTORS INFLUENCING THE SURVIVAL OF PATIENTS WITH THIRD DEGREE BURNS OF MORE THAN 70% TBSA

Hsu Wei-shi, Cao Qi-dong, Shin Tsi-siang

Burn Unit, Rui Jin Hospital, Shanghai Second Medical College

From May 1966 through March 1984, 83 adult patients with third degree burns of more than 70% TBSA were treated in the authors' Burn Unit. Sixty-seven(80.8%) of the patients died. The case records of the patients who died were reviewed in an effort to determine the factors affecting the survival rate of patients with very extensive third degree burns.

The cases were divided into two groups: the non-operated group (27 patients) and the operated group (56 patients). Eschar excision followed by intermingled grafting was carried out in all the patients of the second group. All of the 27 patients of the first group died. Of these deaths, 7 were due to severe inhalation injury complicated with ARDS, 7 were due to shock, 10 to severe wound sepsis, and 3 to acute fulminating septicemia. Because of these complications, it was impossible to perform early surgical excision and grafting.

In the 56 patients of the second group, 16 survived and 40 died, representing a mortality rate of 71.4%. In view of the 100% mortality rate of group 1, it seems that early excision and grafting is advisable in such cases. Infection was the most common cause of death in the second group, with 34 patients succumbing to septicemia and wound sepsis. Four others died of disseminating fungal infection and pneumonia. Factors contributing to the death of these patients were failure of allo- and xenografting, incomplete excision of infected aschar, poor patient condition before escharectomy, surgery performed during times of septicemia and wound sepsis, severe fungal infection of the wounds, and inadequate nutritional support due to gastroenteric dysfunction.

7. A RETROSPECTIVE SURVEY OF FACTORS AFFECTING THE SURVIVAL RATE OF SEVERELY BURNED PATIENTS

Yang Zhong-cheng, Li Ao(Ngao)

Burn Center, Souhwestern Hospital, Third Military Medical College CPLA, Chongqing

From 1970 to 1983, 69 adult patients with burns of more than 80% TBSA or third degree burns of more than 50% TBSA were treated at our Burn Center. As part of this retrospective study, the patients were divided into two groups: those who survived, and those who died. All were treated by the established standard methods of our institute.

The causes of death in the severe burn cases were numerous. Shock, septicemia, and multiple system organ failure occurred far more frequently in the non-surviving group. Apart from the patients who died at the accident site or during the shock phase, most patients died because of organ failure.

Sepsis was the major cause of death in the later stages, but in many cases the sepsis was superimposed on a state of pre-existing organ failure. Overall, organ failure must therefore be considered the predominant cause of death in severely burned patients.

The occurrence of early organ failure was dependent mainly upon the severity of the burn injury. There was an especially close relationship observed between organ failure and severe inhalation burns. 3,617 cases of burn injury once studied by the authors showed an overall mortality rate of 7.52%. However, the mortality rate for 278 cases complicated with inhalation burns was a much higher 50.4%. Thirty cases with severe inhalation burns all died.

The data also indicate that escharectomy should be postponed in patients suffering from septicemia or organ failure, Since their condition tends to worsen immediately after surgery.

8. ANALYSIS OF 215 DEATHS IN BURNED PATIIENTS

Xin Shi-lin et al

First Teaching Hospital, Wuhan Medical College

Of the 2,136 burn patients treated at the authors' hospital between 1958 and 1984, 215 died. This represents a fatality rate of 10.1%. Factors influencing the death of these patients were analyzed, and the authors believe that the following measures are helpful in reducing the fatality rate of burn victims:

1) Adequate fluid replacement, especially colloid transfusion, should be provided.

2) If possible, long-distance transportation during the shock stage should be avoided.

3) Large amounts of intravenous penicillin should be used in controlling infection during early postburn stages.

4) Early management of burn wounds, including eschar excision, should be carried out.

5) Preventive measures, of whatever sort, should initiated as early as possible.

9. AN ANALYSIS OF TWENTY BURN PATIENTS MORE THAN SEVENTY YEARS OF AGE

Kang Shao-yu, Yang Zhong-cheng

Burn Center, Southwestern Hospital, Third Military Medical College, CPLA, Chongqing

From January 1979 to December 1983, 20 burn patients more than 70 years old were treated at our Burn Center. The patients, ten male and ten female, had an average age of 79.4 years, the oldest being 100. Scalds and flame burns each accounted for half of the cases. The mean of the burn areas was 21.5% TBSA, with that of the full-thickness burns being 19.9% TBSA. Ten cases were admitted within 2-4 hours of injury, while the others were admitted after having passed the shock stage. Eight patients survived, eight died, and four refused further treatment. During this study, we made the following observations regarding the special characteristics of elderly burn patients:

1) Elderly burn patients more likely to go into shock and to experience visceral complications than are younger patients. They also tolerated fluid excess poorly.

2) Older patients require extra hospitalization time because of declined healing ability. In this study, 18($\pm$2) days were required for superficial 2^{o} burn wounds to heal, and 30($\pm$7.18) days were needed for the healing of deep 2^{o} wounds. Although the early performance of eschar excision and skin grafting is usually advisable, removal of more than 5.0% of the eschar at any one time should be avoided.

3) Infection is the most common cause of death in elderly burn patients. Six of our patients died of complicated sepsis.

4) Frailty is the most important characteristic of the elderly burn patient. They are especially difficult to treat because even relatively mild changes in their condition may prove fatal.

10. ANALYSIS OF THE CAUSES OF BURNS IN 1006 CHILDREN

Zhu Zhi-xiang et al
JiaMauSi Medical College

From January 1974 through December 1984, a total of 1006 children were admitted to our Burns Unit. Among them were 653 boys (64.9%) and 353 girls (35.1%). 769 (76.4%) of the children were under the age of 5 years.

In this group of children, the greatest number of burn accidents occurred during the seasons of summer and winter. Most of the patients came from rural areas. 88% of the burns occurred in the child's home, while eating or drinking. Burns causes by stove fires or explosions were seen only in children from rural areas.

On the basis of this investigation, we suggest that preventive efforts be directed toward burn injuries in children under 5 years of age, especially during mealtime, and during the summer and winter seasons.

11. CLINICAL ANALYSIS OF 1255 CHILDREN WITH BURN INJURIES

Ai Shen-hai

Burn Center, Southwestern Hospital, Third Military Medical College, CPLA, Chongqing

From 1958 to 1983, 1255 children with burn injuries were admitted to this burn center. The overall death rate was 4.7% (59 cases). The causes of death were septicemia (30 cases), shock (17), cerebral edema and hernia (4), acute renal failure (4), severe burn wound sepsis (2), and complications resulting from severe inhalation injuries (2). Fifty-six positive blood cultures were obtained from 59 children who died and the offending organisms recovered were mostly Staphylococcus aureus and Pseudomonas aeruginosa.

The burned children were characterized as follows:

1) Children made up 26.9% of all the burn patients admitted during the above mentioned period.

2) 64.08% of the children were less than 4 years old.

3) Most injuries (64.06%) occurred during the hot season (from May to September).

4) 96% of the children were injured indoors.

5) The male to female ratio was 1.5:1. (The ratio in adults was about 3:1).

6) Scalding was the main cause of injury in the children. In those less than 4 years of age, scald accounted for 81.76% of the injuries.

Since the death rate is closely related to the extent of the burned area, the author suggested the adoption of the following "1-3-5" classification childhood burn cases:

1) MILD BURNS: less than 10% TBSA affected

2) MODERATE BURNS: 10-29% TBSA affected

3) SEVERE BURNS: 30-49% TBSA affected

4) VERY SEVERE BURNS: more than 50% TBSA affected.

12. TREATMENT OF 129 SERIOUSLY BURNED CHILDREN

Xiong Guo-zuo et al
Affiliated Hospital, Shihezi Medical College, Xingjiang
China

From 1970 to 1981, 129 children with burns of more than 25% TBSA or third degree burns of more than 10% TBSA were treated at our hospital. The children were from 7 weeks to 12 years of age. The average burn area was 39% TBSA (11-96%), and the average third degree burn area was 21% (0-92%). Twenty of the children died. This represents a fatality rate of 15.5%.

Based on the data gathered during the course of this study, the following aspects of the treatment of such cases are discussed:

1) Five suggestions regarding the prevention and treatment of burn shock in children.

2) The transfusion budget for burned children during the shock stage.

3) Problems regarding the early diagnosis of septicemia.

4) The use of antibiotics in the prevention and treatment of septicemia.

5) Special wound management problems encountered in treating burned children.

13. ACTIVITIES OF DAILY LIVING ASSESSMENT OF THE SEVERELY BURNED CHILD

Jean E. LeMaster, P.T., Karen S. Kaminski, et al
Shriners Burns Institute, Galveston, Texas

Evaluation of the burned child's morbidity is complex. Joint range of motion measurements are commonly taken but do not sufficiently describe the child's ability to function in everyday life.

Eight children who survived massive burn injury between 1981-1984 were given activities of daily living assessment. Patient characteristics: (mean ± SEM) age (3.8 ± .8 years), %TBSA burn (90±2), length of hospital stay (79.8±8.2) days. Four of eight patients had amputations of finger(s) and/or thumb. Three of these patients had loss of five or more fingers at PIP/MCP joints.

Six of eight patients performed at age appropriate levels in feeding/eating skills. Four of eight patients could dress themselves completely. All patients were able to ambulate independently.

Tasks requiring gross motor skills were performed better than those requiring fine motor skills. Independent walking is accomplished earlier than dressing skills. Zipping, buttoning and tieing shoes are difficult tasks to accomplish in this patient population. Patients learn to adapt to their disability by using pull on and off pants/shirts and velcro closure shoes.

Although mean total body impairment determined by the AMA physical impairment guide is over 50% in these patients, they are successful in completion of most ADL's. Specific treatment needs are determined by periodic assessment of daily living skills during burn rehabilitation.

14. USE OF MODIFIED SWEDISH KNEE CAGE IN BURNED CHILDREN AMBULATION

Karen S. Kaminski, O.T.R., Jean E. LeMaster, et al
Shriners Burns Institute, Galveston, Texas

The Swedish Knee Cage was designed to assist patients with genu recurvatum. The brace stabilizes the knee with lateral and posterior supports but does not inhibit knee flexion.

Children who have had massive burn injury with multiple surgical procedures suffer general muscular weakness during hospitalization. Upon ambulation poor balance and muscular weakness causes knee hyperextension. A modified Swedish Knee Cage has been fabricated of low temperature thermoplastic splint material and applied to three burned children age, $\bar{X}$=6 years, %TBSA burn $\bar{X}$=76.6. These children had length of hospital stay, $\bar{X}$=73.6 days. All children had fascial excision with autografts to bilateral lower extremities.

The modified Swedish Knee Cage was applied to each child to prevent knee hyperextension and assist in knee control re-education. This device allows for stable weight bearing and correct foot position. The device is discontinued gradually as strength in lower extremities improves and knee and ankle position are maintained without support. Fabrication of this device and a case study will be presented.