

THE TUTORIAL GROUP.

THE TANNIC ACID TREATMENT OF BURNS.

By Miss E. Dickinson, F.B.C.N.

The following paper was presented by Miss Dickinson, Sister-Tutor, Boundary Park Hospital, Oldham, to a meeting of the Tutorial Group of the British College of Nurses, held at 39, Portland Place, on March 17th.

A burn is defined as the reaction of the tissues to injury in the form of heat dry, heat producing what is commonly called a burn and moist heat producing a scald. A scald tends to affect a larger area since fluid spreads more readily, and its effect is more superficial because of the more rapid cooling which takes place.

The course of a burn is divided into four stages: (1) Shock, (2) Reaction, (3) Toxæmia, and (4) Healing and Recovery.

The shock follows immediately upon the injury except in very slight cases, and may last for 24 hours or longer. The larger the area and the younger the patient, the more severe the shock. An extensive superficial burn because of the injury to numerous nerve endings produces a profound degree of shock, which may end fatally, especially in burns of the chest and abdomen.

The stage of reaction follows, the temperature is raised, the pulse improved, and although pain becomes more evident at this stage, in cases that react well to treatment the general condition is much improved until the third or fourth day when the symptoms of toxæmia appear. The temperature rises to 103–104 deg. F., pulse and respiration rate is raised, there is often delirium, and complications arise, such as broncho-pneumonia in burns of the chest, diarrhoea and colic when the abdominal wall is affected, and cerebral congestion in burns of the head. Renal congestion and albuminuria are very common. The greatest number of deaths from burns occur in this stage. The toxæmia is due to the poisonous substances produced in the injured tissues being absorbed into the general circulation. If this stage is successfully overcome the progress of healing follows when contracture has to be guarded against.

General Treatment—Shock must be treated by rest in bed with the head low, and by warmth. Copious fluids given and saline per rectum. Cardiac stimulants are necessary, and morphia may be prescribed for pain and restlessness. In the stage of reaction the body must be prepared for the toxæmic attack by giving a light nourishing diet and alkalis. Alkaline sodium phosphate is given by mouth, and bicarbonate of soda given with the rectal saline. When toxæmia is established treatment consists of copious fluids, alkalis, stimulants for any sign of cardiac weakness, hypnotics for restlessness and appropriate treatment for complications as they arise. Intravenous infusion of alkaline saline, or blood transfusion, may become necessary.

Local Treatment.—The aims of local treatment are:—

- (1) To lessen pain.
- (2) To protect the wound and prevent loss of fluid.
- (3) To prevent toxæmia.
- (4) To prevent infection of the wound.
- (5) To prevent contractures.

Numerous and varied are the methods of local treatment which have been applied to burns but none of them fulfil all these aims so well as the application of Tannic Acid, and none have been so successful in preventing toxæmia, thereby greatly reducing the high mortality rate. The application of Tannic Acid over the raw surface of a burn produces a coagulum the results of which are:—

- (1) It renders the products of injury and proteolysis insoluble, and thereby prevents their absorption.
- (2) It prevents septic infection of the wound.
- (3) It prevents loss of fluid from the raw surface.

Other advantages of this treatment are that its application is simple and painless, pain due to the injury is quickly

relieved, and healing takes place more rapidly than with any other form of treatment, and dressings are largely dispensed with.

Method of Treatment.—After the primary shock has been treated a tent is made over the bed with blankets and electric lamps for warmth and the area is cleaned with ether, an anaesthetic usually being given. The dirt and debris are removed and the blisters punctured with sterile instruments then the patient laid on a sterile sheet without covering if the area is extensive or if less extensive may be partly clothed and the area surrounded with sterile towels. The area is then gently sprayed over with a freshly made 2½ per cent. solution of Tannic Acid in sterile water. The spraying is repeated every half hour for twenty to thirty applications or until a dark brown leathery tissue is formed. Each coat must be dry before the next is applied and the drying may be hastened by gentle radiant heat, but must not be too hurried. The area is quite painless after the first thin film has formed, and after this film has formed the surface should be extended as much as possible to prevent cicatricial contracture or puckering. If the front of the neck is involved a small pillow should be placed under the shoulders and the head stretched back. If the axilla surface and side of the chest, the arm should be secured by a clove hitch to the head rail of the bed, and in the case of burns of the buttocks and back of the thighs treatment is best carried out if the feet are slung to a Balkan beam. After the coagulum has formed the part can be covered and the patient settled in a comfortable position cradles being used to take the weight of the bedclothes. Any discharge which collects during treatment raises blebs and these must be opened and dressed with Eusol or Saline. In about seven days the crust begins to peel at the edges and can be trimmed off, aseptic measures being employed and great care taken not to pull upon any part. As the crust separates it leaves a healed surface in superficial burns and a clean raw surface in deeper lesions. The raw areas are treated by the usual methods, Eusol dressings being ordered as a rule. Boric acid is avoided as it has been found to give rise to toxic symptoms applied in conjunction with tannic acid.

Splintage is necessary if the raw area is large or if the flexor surface of a joint is involved.

In burns of the face special precautions must be taken to protect the eyes as tannic acid is extremely irritant to the conjunctiva and cornea. The lids should be closed and a thick layer of vaseline applied over and around them and covered with wool. A face-mask of lint with holes for the eyes, nostrils and mouth is soaked in the solution and secured in position. It is kept on for about 12 hours or until a light brown tan is formed which quickly darkens on exposure to air.

The solution must always be freshly made as it turns into gallic acid on standing. It is well to have the tannic acid powder in small measured amounts in packets or corked glass tubes; 45 grains is sufficient to make 4 oz. of the solution and is a very convenient amount.

Tannic acid is not so effective applied to cases that have been treated for more than 12 hours by any other method. A coagulum will not form after about 24 to 30 hours, and it is quite ineffectual in cases that have already become septic.

In applying emergency dressings to burns care should be taken not to apply anything that will interfere with subsequent treatment. Oily dressings must on no account be used. The best first aid dressing is lint or linen soaked in a 2½ per cent. solution of Tannic Acid in 1–2,000 Perchloride of Mercury (450 grs. tannic acid powder and 1 perchloride tablet gr. 8½ to 2 pints of water).

If this is not available compresses of sodium bicarbonate solution, 1 dram, to 1 pint should be used.

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