
LESSONS FROM THE BOSTON FIRE

When 114 victims of the Cocoanut Grove fire in Boston were brought to the Massachusetts General Hospital the staff were ready not only with an organization inspired by Pearl Harbour for dealing with a large influx of casualties but also with a clear-cut programme for the treatment of burns, on which two research projects were running at the time. The experience of the various departments of the hospital is recorded in a symposium of fifteen papers,¹

¹ *Ann. Surg.*, 1943, **117**, 801.

from which, out of a wealth of detail, a few facts of general interest emerge. As is to be expected when large numbers of people are subjected to the same physical violence, the injuries conformed to a pattern. The most obvious feature was the superficial burning, more extensive in women than men owing to differences in clothing; but of greater consequence were the accompanying respiratory lesions due to inhalation of flame or gases. The burns were of the type known as flash burns—i.e., brief exposure to high temperature—and the distribution of the burns bore striking testimony to the protection afforded by ordinary clothing against this kind of burn. Flash burns are common in warfare and often occur in circumstances in which respiratory complications are likely, so this aspect of the disaster is of special interest now. Although there was panic in the night club, none of the M.G.H. cases were found to have fractures. The conformity of the injuries to a pattern must not be forgotten if any attempt is made to compare the results of treatment with those obtained in other circumstances. In this connexion it is worth noting the speed with which the victims were got to hospital and the absence of treatment before admission.

Altogether 491 persons lost their lives in the disaster, and only 181 of the injured reached hospital alive, 39 of them dying later. The high proportion of dead to injured—of 114 victims brought to the M.G.H. only 39 were alive—clearly shows that there was at work some factor other than burning, which was for the most part superficial. This was early realized by the staff of the hospital, and the cherry-red colour of carbon monoxide poisoning was noted in some victims on admission. In view of the high death rate the paucity of post-mortem reports in the symposium is disappointing. It is true that a few are given in detail, but one gathers that only six were performed at the M.G.H. and a further sixteen in other parts of the city. If it is assumed that these are representative, the deduction follows that nearly all the fatalities were due to respiratory lesions—either burning of the air passages or asphyxia. There is nothing to indicate whether any of the asphyxial cases were of the type seen in the shelter disaster in this country. Of more practical interest than the asphyxial cases were those with burns of the air passages, for these presented a serious problem in treatment. An early observation was that patients with respiratory complications did not all respond to sedation with morphine. It is suggested that hyperactivity or even delirium may be due to cerebral anoxia, and two patients were promptly quieted by oxygen inhalation: for these patients morphine may be harmful. A few hours after the fire a number of cases developed dyspnoea, which had not been present on admission. This was attributed to the appearance of oedema in the respiratory burns comparable to that seen in burns of the skin. About twenty-four hours after the fire dyspnoea and cyanosis became worse in some of the cases, and in several tracheotomy or intubation was performed. Only two patients out of five treated by tracheotomy survived, and seven in all died in this stage. In three cases post-mortem examination showed that the lesions were too extensive to be relieved by tracheotomy—membranous inflammation extending into the smaller bronchi. The cause of this

change was in doubt, but it was thought to be the inhalation of toxic fumes. At a later stage the picture was of migratory atelectasis and emphysema due to obstructive bronchiolitis. One of the more important conclusions from this experience of pulmonary complications is that the degree of inhalation burn could not be ascertained immediately after the injury, and that the extreme oedema of the air passages that occurred in some cases was unpredictable. It is urged that great vigilance is needed for attacks of oedema even in patients with minimal surface burns.

The treatment of the surface burns consisted of no débridement, no cleansing, boric ointment dressings, and internal chemotherapy. In addition burns of the face, scalp, and extremities were bandaged with pressure. The dressings were not changed until the fifth to the tenth day, and in the case of superficial burns no other treatment was used. For chemotherapy sulphadiazine was given, and a previous observation that the concentration of drug in blister fluid of the burns follows closely that of the blood was confirmed. Thirteen patients were treated with penicillin by injection; most of these were cases in which the temperature remained raised after the sixth day. No claims are made for the value of this treatment, in which the dosage was afterwards thought to be too small. It is difficult to assess the results of the treatment of surface burns, but the staff of the M.G.H. thought them gratifying. Though bacteriological studies showed that most of the burns were infected, the second-degree burns healed without clinical evidence of infection and with minimal scarring. The deep burns remained unusually free of invasive infection. Whatever may be thought of this method as a routine treatment of surface burns, there is no doubt that in this particular disaster, with its high incidence of pulmonary lesions, it had great advantages. The minimal interference with surface lesions accorded well with the treatment of shock and asphyxia. It is to be hoped that information will be forthcoming about the fate of the 142 victims taken to other hospitals in Boston: 110 of them survived. There should be ample material for comparison with the experience of the Massachusetts General Hospital, whose staff have done real service in preparing this symposium.

PENICILLIN IN VENEREAL DISEASE

It is already well known that penicillin will cure uncomplicated gonorrhoea with a rapidity and certainty unapproached by any other form of treatment. This was to be expected from the *in vitro* observations made by the Oxford workers¹ in 1941; the gonococcus heads their list of pathogenic bacteria given in the order of their sensitivity to penicillin in culture. Clinical confirmation of this effect was first obtained in the U.S.A.,² and repeated in a small number of cases in the British Army in North Africa.³ The necessary treatment for a man consists of a series of intramuscular injections over a period of about 24 hours and using not more than 100,000 units; the discharge ceases "like turning off a tap," and the usual tests for freedom from infection become and remain negative. It is obvious that under present conditions penicillin should not be used

¹ *Lancet*, 1941, 2, 177.

² *J. Amer. med. Ass.*, 1943, 122, 1217.

³ *British Medical Journal*, 1943, 2, 755.