TREATMENT OF PENICILLIN ANAPHYLAXIS BY CONTROLLED RESPIRATION

A case report

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Many cases of anaphylaxis to various forms of penicillin have been reported.²⁻⁸ Welch *et al.*⁹ suggested that anaphylaxis was more frequent with penethamate hydriodide ('Estopen') than with other forms of penicillin.

Classically there is sudden collapse and loss of consciousness, either during the actual injection or within minutes of it. Varying degrees of cardiovascular and respiratory failure occur which may be accompanied by convulsions, and some fatalities have been reported.^{5, 7, 10-12} There is some evidence that muscular spasms and convulsions are more prone to occur with 'Estopen'.¹³

In some cases recovery takes place without any specific treatment. Many authors^{3-6, 12, 14} report the use of oxygen, artificial respiration, adrenaline, aminophylline and nikethamide with varying results, and several authors stress the value of antihistamines.¹⁵⁻¹⁷ Winton and Nora¹⁸ suggest noradrenaline and cortisone. Williams¹⁹ advises the application of a tourniquet above the site of the injection and Higgins and Rothchild⁸ used positive pressure artificial respiration in one case but the patient died.

Present Case

A labourer, aged 54, was admitted to hospital for treatment of pulmonary tuberculosis, chronic bronchitis and cor pulmonale.

There was no past or family history of allergy. Twelve years ago he had received penicillin for syphilis and subsequently his W.R. remained negative. He had short courses of 'Estopen' in recent years for his bronchitis.

On admission 'Estopen' was given in a dose of one million units twice daily to clear up the bronchial infection. On the fifth and last day of the course, within seconds of the injection, the patient became ashen in appearance and collapsed. He was unconscious, moderately cyanosed and sweating, but his skin was cold. His pupils were dilated, the pulse was impalpable and heart sounds could not be heard, but gasping respirations continued. Generalized twitchings and convulsions then followed, occurring in spasms at about minute intervals.

The bed was tipped head down, nikethamide

2 ml. was given intramuscularly and adrenaline 10 minims was given subcutaneously. Oxygen was administered through a polythene mask. The heart sounds became audible but the cyanosis deepened, the convulsions continued and his condition was desperate. Manual inflation of the lungs with oxygen, using a mask and breathing bag with a closed expiratory valve, was begun 10 to 15 minutes after the onset. The inflation was extremely difficult because of laryngeal spasm and convulsions. Gallamine triethiodide ('Flaxedil') 60 mg. was therefore given intravenously. The convulsions ceased and inflation became easy with rapid improvement in his colour and pulse.

Although gasping inspiratory efforts soon appeared, assisted¹ respiration was necessary for three hours. His recovery was complete.

Discussion

In the present case severe convulsions and respiratory failure were thought to be due to 'Estopen' anaphylaxis. The patient's chance of recovery seemed remote until the anoxia could be corrected by obtaining relaxation. The use of the curare-like drugs in anaphylactic shock may be valuable where generalized muscular spasms or convulsions make inflation of the lungs difficult. The possibility of aspiration of stomach contents into the lungs should be borne in mind when these drugs are used.

It would seem advisable to have a simple apparatus available for administering oxygen under manual positive pressure where penicillin is given in any quantity.

Summary

The features of penicillin anaphylaxis and treatment are outlined. A case is reported where a curare-like drug was used to allow resuscitation of a patient by controlled respiration.

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grene associated with thrombo-phlebitis. These were mainly collected from the literature.

In almost 80 per cent. of his cases the lower limb, usually the left, was affected and the upper limb in the rest. In 2 of the 27 the condition was bilateral and 8 had areas of thrombo-phlebitis other than in the affected limb.

The factors associated with the thrombo-phlebitis were post-operative 5, post-partum 4, post-traumatic 6, visceral malignancies 2, miscellaneous (pulmonary tuberculosis, post-I.V. transfusion, etc.) 6, unknown 4.

The average age of the cases was 41.4 years and the sex incidence almost equal.

Clinically 56 per cent. of his series of cases presented initially as a phlegmasia caerulea dolens (blue phlebitis or blue leg) and 44 per cent. as a phlegmasia alba dolens (white or milk leg) which progressed to the blue state. In two-thirds of the cases the peripheral pulses of the affected limb could not be felt. In the absence of peripheral pulses patency of the arterial tree was proved by pathological examination of the amputated specimens in association with free arterial bleeding from the proximal end of the main artery at operation or by arteriogram.

Gangrene, in this series, followed usually four to eight days after the onset of the blue state. In contrast to the case described above, the gangrene was of the distal type affecting toes or the distal part of the foot. As emphasized by Haemovici, the gangrene predominantly affects the superficial tissues so that a conservative attitude with later

excision of necrotic skin and grafting avoids unnecessary amputation.

Pathological examination of amputation specimens in this series confirmed widespread thrombo-phlebitis of superficial and deep veins with a patent arterial tree.

The mortality in this series of 27 was almost 40 per cent., but is naturally affected by the factors underlying the thrombo-phlebitis.

Summary

(1) Experimentally complete venous obstruction to a part produces gangrene. In clinical practice thrombo-phlebitis with some element of arterial spasm may be responsible.

(2) A case of gangrene of skin of thigh is described and an attempt made to prove it was of venous type.

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