A CASE OF PENICILLIN REACTION

BY

W. MICHIE, F.R.C.S.Ed.

Major, R.A.M.C.; Surgical Specialist

AND

H. W. C. BAILIE, M.B., B.Ch.

Capt., R.A.M.C.; Resuscitation Officer

Unlike the sulphonamides, which soon after therapeutic birth began to show occasional reactions, penicillin has maintained a relatively unclouded reputation. Publication of the following case is therefore of interest.

Case History

On Sept. 7, while reconnoitring an enemy-held wood, a tank squadron commander was hit by a fragment of an 88-mm. shell which traversed his tank. The fragment—1½ by 1 cm.—which was embedded superficially in his lower lateral right calf, was removed an hour later and a sulphanilamide dressing applied. The officer remained on duty, but on Sept. 19 the leg became painful and the ankle swollen. He was admitted to a field dressing station, where sodium sulphate dressings were applied. On Sept. 24 sodium penicillin solution was instilled direct into the wound, with a similar application on the following day. On Oct. 2 he was admitted to a casualty clearing station, where a sinus 1 in. long was opened up. Since this officer was a key man urgently required by his unit, undiluted sodium penicillin powder (without sulphonamide vehicle) was applied in a much higher concentration than is normally employed, in the hope that recovery might be hastened. Similar application was made on Oct. 5. Progress was satisfactory, and on Oct. 10 the wound had almost completely epithelized. On Oct. 11 the patient intimated that he had a mild chronic bilateral external otitis. At 5 p.m. the same day two drops of sodium penicillin solution (100,000 units in 5 c.cm.) were instilled with a pipette into each ear. By 2 a.m. the next morning both ears were discharging profusely. His leg, previously almost healed, began to weep copiously, and literally saturated a moderately heavy cotton-wool dressing. The area affected corresponded roughly with that of previous dressings with which penicillin had made contact (Fig. 1). By evening, eczematous weeping patches had broken out over both ears, the lower face, and the chin. On Oct. 13 a penicillin patch test, consisting

FIG. 1

FIG. 2

of two drops of penicillin solution on gauze, was applied to his arm. Within five hours the sensation was "similar to a T.A.B. reaction," and the next morning the patch area presented a weeping eczema similar to the areas originally affected (Fig. 2). A mild secondary infection of all areas subsequently developed. Healing ensued gradually after treatment with "nuflav" powder.

The patient was seen again in December. The leg remained soundly healed but the chronic otitis persisted.

Comment

The particulars of the penicillin used at the field dressing station are unknown. That used in the ear and on the leg at the casualty clearing station was Pfizer batch 1664, and for the patch test Pfizer batch 1594. It is understood that the above is the only occurrence of a reaction of this type to penicillin therapy in more than 30,000 cases treated in the B.L.A.

No attempt is made to discuss the causative factors of the reaction, and it is impossible to tell whether it was due to

penicillin itself or to associated impurities. Presumably, however, it was a matter of personal idiosyncrasy, since many other cases were treated with the same batches of penicillin and showed no reactions of any kind.

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SUBGLOTTIC STENOSIS AFTER EXPOSURE
TO A HIGH CONCENTRATION OF
SCREENING SMOKE (ZINC CHLORIDE)

BY

R. B. LUMSDEN, M.B., Ch.B., F.R.C.S.Ed.

Lieut.-Col., R.A.M.C.

AND

C. D. WEIR, M.C., M.B., Ch.B.

Capt., R.A.M.C.

On Oct. 3, 1943, in the Mediterranean theatre of war, Pioneer K., a Palestinian Arab aged 28, was exposed to an extremely dense cloud of screening smoke (zinc chloride) issuing from a room below, where smoke generators had exploded. He was one of seven casualties, three of whom died. The following is a record of his case.

Case History

On admission to a general hospital two hours after exposure the patient was found to be moderately distressed. He had a harsh cough with profuse frothy sputum, slight stridor, and vomiting. A few rhonchi were present. Oxygen was not required. Twelve hours later his temperature was 101.8°, pulse 135, and respirations 35. He complained of a sore throat and retrosternal pain and was coughing up frothy salmon-pink sputum, but was no longer distressed. Sulphapyridine was started. Blisters developed on the ears and hands. These were punctured two days later and straw-coloured fluid was evacuated (insufficient for chemical tests). Subsequent healing was uneventful and was not delayed. The bronchitis resolved in five days, leaving the patient afebrile, with hoarseness and slight cough, and complaining of pain in the throat. The pharynx looked healthy. Indirect laryngoscopy two weeks after the accident revealed a yellowish-white membrane over the anterior surface of the larynx, involving both ventricular bands and vocal cords. There was some generalized oedema, and the entire larynx was of a dusky-red hue. Cord movements were normal. On Oct. 23 (three weeks after admission) he developed stridor, which passed off but recurred on a number of occasions, until on Nov. 2 tracheotomy (under local analgesia) became necessary. This was followed by a right basal pneumonia which resolved under sulphapyridine. By mid-November he was up and about, but on Nov. 18 laryngoscopy showed marked oedema of the arytenoids and ventricular folds, with stricture of the glottic aperture.

The patient came under our care in a Middle East General Hospital on Jan. 13, 1944, presenting the problem of reconstitution of an adequate airway. On admission his general condition was good. There were considerable congestion and oedema of both arytenoids and ventricular bands, redness of the vocal cords, and marked subglottic swelling. During the next six weeks he had two intercurrent attacks of bronchitis with pneumonitis, and one attack of tonsillitis which resolved rapidly under sulphathiazole but delayed any attempt to deal with the stenosis until March, 1944, when partial "corking" of the tracheotomy tube was tried out but could not be tolerated.

On May 17 (7½ months after the accident) direct laryngoscopy demonstrated marked subglottic narrowing, with granulations blocking the lumen. A portion of granulation was removed for examination, and the histological findings were: "Oedematous granulation tissue with fibrosis in the deeper layers. A tendency to haemorrhage is indicated by collections of haemosiderin-containing macrophages. The appearances suggest that it is some mechanical or chemical factor, and no infection, that is responsible for failure to epithelize." Blood Wassermann and Kahn tests were negative. During the next four weeks Jackson bougies (up to size 20) were passed on two occasions, and on July 26 continuous dilatation was instituted by means of a piece of stout rubber pressure-tubing about 2 in. long, the lower end of which was cut obliquely to enable it to lie immediately above the tracheotomy tube. This tubing was inserted into the subglottic position through the tracheotomy stoma by pulling on a stout silk thread passed down through a laryngoscope, brought out through the stoma, and stitched to the upper end of the rubber tubing. The other end of the thread was stitched to the lower end of the tubing, thus making externally a continuous circuit with the tubing in position. A second thread, stitched transversely to the lower oblique end of the rubber tubing, was anchored to the

tracheotomy tube when in position. On two subsequent occasions, at fortnightly intervals, the tubing was replaced by a piece of larger bore, but on the latter occasion it would not pass through the tracheotomy stoma and was therefore introduced through the mouth, with the aid of the laryngoscope. A third attempt to replace this tube by one still larger was unsuccessful, and the same tube was reinserted with some difficulty, owing to persistent exuberant granulations. Some discomfort and swelling followed this manipulation, and continuous dilatation was stopped on Sept. 20. At that time it was feared that external operation would ultimately be necessary.

On Oct. 18 the airway appeared to be remarkably good, and direct laryngoscopy revealed the entire absence of granulations and a somewhat small healed lumen below the vocal cords. Dilatation from above by direct laryngoscopy and from below through the tracheotomy stoma was begun with Hegar's dilators—a procedure which the patient bore with remarkable ease. This was carried out on three occasions at weekly intervals, size No. 11 being easily passed on each occasion. During this period progressive "corking" of the tracheotomy tube was effected, and by Nov. 4 complete occlusion was being maintained throughout the 24 hours. Good movement of rather irregular vocal cords was observed on indirect laryngoscopy. The patient's voice was excellent, and he could undergo considerable exertion without embarrassment. On Nov. 18—13½ months after the accident and 4 months after continuous dilatation was started—the tracheotomy tube was removed. The stoma closed in three days.

Having been discharged from the Service, he was allowed to return to his home, with instructions to attend the nearest hospital for subsequent periodic dilatation.

Comment

This case presents some interesting features: (1) In the literature which we have been able to consult we have failed to discover any reference to the occurrence of stenosis following exposure to screening smokes, and though reference has been made to the possibility of such an occurrence after exposure to mustard gas, no report of an actual case has been found. (2) The persistence of granulations, which disappeared only after continuous dilatation was abandoned—at which juncture it was thought that this method of treatment had been unsuccessful. (3) The employment of Hegar's dilators: the circumstances of this case justified any method of improvisation that was available. These dilators proved to be satisfactory and reasonably convenient.

Continuous Dilatation.—Brief reference to another case which came under the care of one of us (R. B. L.) illustrates the trial of a further method.

A lieutenant aged 25 was wounded in Syria in June, 1941. He was admitted to hospital with a large gaping wound of the right side of the face, mouth, and neck, with loss of a portion of the mandible and thyroid cartilage. A high tracheotomy and gastrostomy had already been performed. There was a fistula between the floor of the mouth and the neck wound, resulting in a constant flow of saliva to the laryngeal wound and tracheotomy opening. This was controlled by the frequent application of an improvised hand-suction apparatus by a special attendant. Six weeks after being wounded he was fit to have a low tracheotomy performed through a transverse incision. At the same time it was thought advisable to attempt to improvise a temporary method of continuous dilatation of the larynx in case this should subsequently prove necessary while the neck wound was still under treatment. A tracheotomy tube, to the end of which a piece of stout rubber tubing was attached, was inserted in an upward direction through the upper tracheotomy stoma. This was left in position for a day or two, in order to demonstrate that the method was satisfactory. Fortunately its later adoption was not necessary, as the larynx healed without any appreciable degree of stenosis.

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The Scientific Instrument Manufacturers' Association of Great Britain (123, Pall Mall, S.W.) announces that Mr. W. Bowen has presented a substantial capital sum, the income of which he wishes to be devoted towards the encouragement and development of invention, design, research, processes, and manufacturing technique in the scientific instrument manufacturing industry. The Council of the S.I.M.A. have drawn up a deed of trust under which the income from the fund is to be devoted each year to prizes to be awarded to the employees of members submitting papers fulfilling the objects of the Trust.

INTESTINAL OBSTRUCTION BY GALL-STONES

BY

MAURICE LEE, F.R.C.S.

Acute intestinal obstruction by gall-stones, although one of the rarer causes of bowel obstruction, has the highest mortality rate of all the obstructions of the intestine. Vick's (1936) figures are as follows:

Simple Obstruction		%	Strangulation		%
Intussusception		15.0	Strangulated inguinal hernia		20.0
Carcinoma		13.0	Strangulated femoral hernia		19.5
Adhesions		7.35	Strangulated umbilical hernia		5.4
Gall-stones		0.7	Other herniae		2.5
Congenital atresia		0.6	Internal strangulation		11.4
			Volvulus		2.6

Mortality of the Main Types of Acute Intestinal Obstruction

Gall-stone obstruction		50-60%
Carcinoma of colon		35-40%
Adhesions		30-35%
Internal strangulation		30-35%

The rarity of the condition is shown by the following figures. Barnard (1902), at the London Hospital in a period of 8 years, was able to collect only 8 cases of gall-stone obstruction—i.e., an average of one case a year. Gibson (1900), in a series of 646 cases of intestinal obstruction, had only 40 due to gall-stones. Prof. Grey Turner informed me that he has had 15 cases in all his surgical experience.

Many of the cases reported have been in very elderly patients, and in more than a few a second laparotomy has been required to remove a second stone. For example, Hinchey (1940) reported a case in a patient aged 79, and Dulin and Petersen (1939) had a patient of 83 who survived operation. Prof. Grey Turner (1932-3) reported a successful and very unusual case, in a patient aged 81, in which the obstruction occurred in the transverse colon. In my own case (described below) the patient was 87 years old and required two laparotomies within two months. The death rate (50%) is high because of two facts—late diagnosis (or no diagnosis) and the advanced age of the patient. Many of these cases give no history of previous gall-bladder trouble and have been quite well until the intestinal obstruction has occurred.

Gall-stones which give rise to intestinal obstruction are always large and have entered the bowel by a process of ulceration from the gall-bladder. The fistulous communication is usually between the gall-bladder and duodenum, though other internal communications have been described. Neligan (1915) reported an instance in which gall-stones were vomited into a pan by a patient with such force that the sound suggested a volley of buckshot being fired into a metal utensil. In this case the fistulous communication must have been between the stomach and the gall-bladder.

Not all gall-stones that get into the intestine cause acute obstruction. Some are passed naturally per rectum; others travel as far as the anus and there become impacted. It is very rare for the condition to be diagnosed previous to operation; a review of the literature reveals that only 7 cases were so diagnosed. In many cases the obstructive symptoms are at first temporary; the patient is relieved for a while and then the symptoms recur. This is very misleading to the diagnostician, and accounts for the high mortality of the condition. The remissions and recurrences of the obstruction are due to the fact that the gall-stone becomes temporarily obstructed in the bowel, is dislodged by vigorous peristalsis, and becomes impacted lower down in the bowel, where the lumen is narrower. It therefore follows that in most cases of gall-stone obstruction the stone is found obstructing the bowel in the terminal ileum. In my patient this occurred in the first obstruction, but in the second laparotomy the stone was found in the bowel much higher up in the ileum because it was a large stone and therefore could not travel further down. In view of the insidious onset of gall-stone obstruction and the difficulty in diagnosis of the condition in its early stages, the practitioner is faced with a case in which treatment is applied late, and perhaps when the patient is moribund. As in other types of intestinal obstruction, any means that can assist early diagnosis must be used. It is not