PNEUMOCOCCAL SEPTICAEMIA WITH RECOVERY

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Excluding the transient bacteraemia of lobar pneumonia very few instances have been recorded of pneumococcal septicaemia, proved by blood culture, in which a cure has been obtained as a result of giving sulphapyridine. The case to be described presents sufficient unusual features to make it worth publishing.

Case History

The patient, an Army officer aged 39, was wounded on May 20, 1940, in Norway by flying bomb-splinters, and received a severe laceration of his left calf and a small wound below the left patella. No fracture was sustained. He was admitted to a Liverpool hospital, and the infrapatellar wound completely healed within six weeks. The calf wound was treated by

"Direct Smear from Wound.—Pneumococci predominate. On culture pneumococci and a Gram-negative bacillus, possibly *B. friedländeri*, were grown.

"Blood Culture.—Culture shows a pure growth of pneumococci.

"Urine.—Acid reaction, albumin ++, sugar nil, acetone nil. Deposit: one granular cast, one or two leucocytes and epithelial cells, and a few coliform organisms, not in excess.

"W.B.C. Count.—11,200 per c.mm.—polymorphs, 87.2%; lymphocytes, 11.6%; basophils, 0.4%; eosinophils, 0.8%.

"Radiograph.—The contour of the left ventricle is suggestive of a degree of dilatation. The lung fields are normal."

Progress

On the morning following the day of admission a small swelling about an inch in length and half an inch in width suddenly appeared in the long axis of the inner aspect of the right forearm. It was red, tender, warm, and indurated. Local heat was applied and by the next morning no trace of this swelling could be found, but another swelling had appeared between the lower border of the thyroid cartilage and the suprasternal notch. This was more diffuse and more tender than its precursor, and extended beneath the left sternomastoid muscle. The overlying skin was red and oedematous

débridement and plaster, and after four months the plaster was removed and replaced by elastoplast. Although this wound had not quite healed the officer was allowed to go home to the South of England as an ambulant patient on November 18. For the first five days of his leave he felt very well, but at midnight on November 23 he suddenly developed a rigor and much retching occurred. The following morning his temperature was 103° F. and a heavy cloud of albumin was present in the urine. A tentative diagnosis of acute pyelitis was made and appropriate measures were instituted. No dysuria was present. Early on the fourth day of the illness the patient noticed a slight sore throat, and this rapidly became worse. On November 28 he was admitted to our hospital.

On examination he was found to be nearly moribund, with a temperature of 106° F. A short time after admission a rigor occurred. His throat was almost uniformly injected, possibly slightly redder in the left peritonsillar region, but no membrane was present. There was a concomitant bilateral cervical adenitis. The calf wound was almost completely healed, but a little thick greenish pus was seen. No cellulitis was present and no crepitus was obtained. There was no tenderness over the kidneys or in the hypogastrium, and although his urine showed a heavy cloud of albumin and was strongly acid the guaiacol test was negative. The spleen was not palpable. The heart sounds were distant and tic-tac rhythm was present together with some degree of cardiac dilatation. The blood pressure was 108/76 mm. Hg. His other systems were normal.

Four 0.5-gramme tablets of sulphapyridine (M & B 693) were given immediately, followed by two tablets four-hourly.

Pathological Investigations

"Throat Swab.—Pneumococci predominate. Non-haemolytic and other organisms present.

but not adherent. No fluctuation was obtained. This was an acute diffuse thyroiditis. Antiphlogistine was applied over the swelling, which became more brawny during the next few days and then gradually disappeared.

By December 1, as the temperature had fallen to normal and the patient had received 19 grammes of sulphapyridine, an attempt was made to stop the drug, but by the same evening the temperature had risen to 100.2° F. A W.B.C. count the following day showed a total of 12,000 per c.mm., so sulphapyridine, one tablet four-hourly, was restarted. Two days later a second attempt was made to stop the drug. The day after doing so, however, the temperature rose to 102.8° F. and a rigor occurred, so a reversion to the original dosage was made. This time the drug was continued until the temperature had remained normal for three days. In all 44.5 grammes of sulphapyridine was given, and by now a moderate leucopenia had resulted, the white cells numbering 4,400 per c.mm.; by the next day this figure had already risen to 5,800 per c.mm. The albuminuria gradually decreased, and was quite gone by December 7.

Commentary

The heavy albuminuria and pyrexia with rigors suggested pyelitis, but that diagnosis was contradicted by the absence of appropriate clinical signs and of pus or organisms in the urine. The albuminuria presumably resulted from the fever.

As the pus from the wound yielded pneumococci, as did the throat and blood stream, it was thought that the primary focus was the calf wound, although six months had elapsed since the wound occurred and no history of recent trauma was obtained. It was considered unlikely

that the inflamed throat was the origin of the infection because this lesion followed four days after the raised temperature. Unfortunately no smear from the wound was taken soon after the injury.

Presumably the transient swelling in the forearm and the thyroiditis were septicaemic manifestations. The appearance of the thyroid closely corresponded with the description given by Giordanengo (1938), who states that only 54 cases of acute non-suppurative thyroiditis have been recorded.

During the administration of sulphapyridine no precautions were taken regarding sulphur-containing foods or drugs and no cyanosis occurred—in fact, the patient felt extremely well after the first few days and no nausea was experienced at any time. Radley Smith (1940) has shown how completely unjustified is the fear of administering sulphur-containing compounds during sulphapyridine therapy. The only substance which it is necessary to restrict, at least for the first few days, is water. This is often overlooked. It is impossible to obtain the optimum concentration of 10 to 15 mg. of sulphapyridine per 100 c.cm. of blood if the patient is allowed fluids *ad lib.* It is surprising that in such a debilitated patient the white cells did not become more greatly reduced. Young (1937) has stated that especial care is necessary in such ill patients, and has shown how inadequate a safeguard are frequent blood counts, since preceding counts often give no indication of the imminence of complete and fatal agranulocytosis. As it was, the total amount received by our patient was very near 50 grammes, which is considered by Sutherland (1939) to be dangerous. The individual susceptibility of patients must vary very considerably.

In all the cases we can trace there has been a delay of several days, due to difficulties in diagnosis, before the administration of sulphapyridine has been started. Bonorino Udaondo and Pinedo (1940) waited five days, and Southwood and Magarey (1940) did not begin chemotherapy till the seventh day, and in each case a cure was obtained. In both of these cases, as in our own, the drug was stopped too soon and had to be repeated.

Summary

The interesting features of this case appear to be:

1. The isolation of pneumococci from a leg wound, the throat, and the blood stream, and the long latent period of six months from the original wound to the onset of septicaemia.
2. The transient nature of inflammatory swellings in the arm and neck, which subsided without surgical intervention.
3. The relatively large amount of sulphapyridine (44.5 grammes) necessary to maintain a normal temperature, and the absence of any ill effects.
4. The long delay of four days before starting chemotherapy and the rapid and complete recovery of the patient.

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F. E. Norris (*Brit. J. Inebriety*, 1941, **38**, 112) states that the relation between alcoholism and crime is becoming an academic question and is now less important in the consideration of the causes of crime as a whole than formerly. Criminals in this country are not commonly addicted to alcohol and are not greatly concerned by its withdrawal after admission to prison. They rarely attribute their delinquency directly or indirectly to alcohol. In cases where there is a recognizable relation between alcoholism and crime the offences committed are only some types of sexual offences rather than the much commoner offences against property.

Clinical Memoranda

Amnioplastin as a Conjunctival Graft

This case is reported because we consider that amnioplastin has some advantages over mucous membrane grafts and possibly, too, over de Rött's (1940) whole foetal membrane grafts, in that it is always available, is easily sterilized, and on account of its amorphous character lends itself admirably to conjunctival repair. Furthermore, it does not necessitate an additional wound at the graft source. It is suggested, therefore, that this might be a useful adjunct in the repair of civil and military eye wounds at the present time.

CASE RECORD

A quarry worker aged 54 sustained an injury to the strip region of his left lower lid by a fragment of stone in August, 1939.

When first seen, four months later, at the out-patient department of the Aberdeen Royal Infirmary he had a somewhat sessile mass on the middle of his lower eyelid conjunctiva measuring 7.5 mm. by 5.5 mm., and infiltrating the base of the lesion was a bead of dark pigment. Radiographs failed to reveal any foreign body, and no enlarged nodes were palpable.

It was decided, as a preliminary measure, to implant the area with radon seeds, giving 6,000 *r* at a distance of 0.5 cm. from the skin surface, and this was carried out on January 19, 1940. Biopsy taken at the time of implant showed the growth to be a malignant melanoma with an admixture of septic granulation tissue. Soon after treatment all the pigmentation disappeared, but at the end of five months, during which the patient was kept under close observation, a faint brown spot reappeared in the treated area and there was still some residual thickening of the centre of the eyelid. This was regarded with suspicion, and it was thought advisable to excise the lid. Actually no trace of malignancy was found in the tissue on microscopical examination following its removal, though metastases and secondary glands became evident before the end of the year.

On June 18, under evipan anaesthesia, the lower lid was excised medially as far as the lower punctum and inferiorly to beyond the lower fornix. Amnioplastin was used to replace the conjunctiva, being prepared and sterilized by boiling to obtain the maximum shrinkage before use, after the method suggested by Chao, Humphreys, and Penfield (1940). A flap of the membrane was sutured to the lower edge of the cut ocular conjunctiva and also to the skin at the lower edge of the wound, so as to make a deep fornix. The free end was then reflected upwards and sutured to the upper border of a pedicle flap from the left temple which was swung over to form the new lower lid. It will thus be seen that the lower lid was replaced and the space between the graft and the eyeball was lined by a double fold of amnioplastin.

During the next few days the only treatment carried out was the instillation of cod-liver oil drops into the eye and the covering of the whole wound area by saline soaks. Healing was satisfactory, and in just over three weeks the base of the pedicle was cut, the amnioplastin and graft having taken well.

When seen three months later some shrinkage of the artificial conjunctiva had taken place near the outer canthus, causing a symblepharon, which, however, has given no discomfort. The inner part of the fornix was of fair depth. No attempt had been made to prevent symblepharon during healing, as is commonly done, by passing a glass rod round the fornix.

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