CAVERNOUS SINUS THROMBOPHLEBITIS CAUSED BY PENICILLIN - RESISTANT ORGANISM

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A case of cavernous sinus thrombophlebitis due to penicillin resistant staphylococcus aureus is reported. Combined antibiotic therapy (Tetracycline, Sodium cephalothin, Kanamycin) effected complete recovery. This case illustrates the importance of :

(1) Establishing the sensitivity of the organism causing septic lesion of the face as soon as possible.

(2) Continuing the treatment with steroids and vitamin B_{12} for some time after all signs of activity of the disease have disappeared, to avoid sequalae.

A short review of literature is given.

Septic thrombosis of the cavernous sinus was first found at autopsy by Duncan in 1821.[1] In the early days the mortality rate of the condition was practically 100 per cent (Grove, 1936).[1] Nowadays cavernous sinus thrombophlebitis is uncommon because of the wide use of broad – spectrum antibiotics and greater stress on preventive measures. Cases of cavernous sinus thrombophlebitis are now found to be caused by penicillin resistant organisms.[2, 3] This paper reports such an instance.

Case Report

A Thai boy, aged 9 years, a resident of Dhonburi province, was admitted on June 16th 1969 (HN. 80541 – 12, AN. 1 – 17829 – 12) for having high fever, headache and swelling of the face and eyelids with blurring of vision for 4 days.

His mother stated that the patient had been well up to 4 days prior to admission, when a small abscess was noted on the right side of his nose. Two days later there developed high fever and painful swelling of the left orbital region and the nose, and blurred vision in the left eye. Subsequently, the swelling spread to the right side of the face including the right eyelids. On the day of admission, the left eye was totally blind and the vision of the right eye had become poor. The patient also had severe headache and deep pain in both orbits.

On admission, the body temperature was 38.0°C, pulse rate 110/min., respiration rate 24/min., and blood pressure 110/60 mm.Hg. The patient was somewhat drowsy but could answer questions. Swelling of the whole face was noted; the abscess at the right side of the nose was subsiding. Many spots of petechial hemorrhage were found on both legs.

Examination of the eyes revealed marked proptosis, the eyelids being edematous with subconjunctival hemorrhage. Although the cornea were hazy, the pupils still reacted normally to light. The visual acuity was only "light perception" bilaterally. There was no ocular movement at all. The fundi were not clearly seen.

Blood examination revealed marked leukocytosis with white blood cells 34,100 c.mm., neutrophils 88% and lymphocytes 12%. Urine and feces were normal. Whole blood was sent for culture and sensitivity test.



Fig. 1



Fig. 2

Due to the poor condition, the patient was promptly treated with penicillin – G sodium, by intravenous drip in 5% Dextrose in water 5 – million units per 1,000 ml., streptomycin 800 mg. by intramuscular injection per day, and terramycin eye – ointment by local application. With 3 days of this regimen there seemed to be no response. The antibiotics were substituted by sodium cephalothin (Keflin) 1 gm. by intramuscular injection per day, tetracyclin 500 mg. in 5% Dextrose in water 1,000 ml. per day by intravenous drip and kanamycin 1 gm. by intramuscular injection per day, plus chymotrypsin (Chymar) 5,000 units by intramuscular injection per day. On the following day blood culture revealed Staphylococcus aureus, coagulase – positive, which was resistant to penicillin and sensitive to tetracycline, cephalothin, kanamycin, chloramphenicol, streptomycin and gentamicin. With the new regimen local and general conditions dramatically improved in the following two days, the body temperature becoming normal in six days The swelling of the face subsided. The patient was able to open his right eye. Then the antibiotics were changed again to chloramphenicol 750 mg. orally per day, streptomycin 800 mg. I.M. per day and tetracycline 500 mg. I.V. per day. The patient continued to improve steadily. He was discharged on July 22nd 1969 (36 days after admission) with good general condition, but the left eye was still proptosed and the movement of the left eye was impossible. The right eye was

normal. Prednisolone 20 mg. and vit. B^{12} were given orally per day as further treatment. The patient came to the follow-up clinic every week, and the left eye gradually improved. (Fig. 2). Five weeks after discharge the recovery was complete.

Discussion

In our case there is no doubt that the patient had thrombosis of both cavernous sinuses, since total ophthalmoplegia with marked proptosis was noted bilaterally. This was probably due to the untreated abscess, which subsequently spread the infection first to the left eye and later to the right. According to Dihr[1] who collected 98 cases from the literature since 1920, the most common source of infection was found in the face (53 cases); among these, the nose was the most common site (25 cases). The source of infection could be in other parts of the body such as the ear, paranasal sinuses, teeth and tonsils. Concerning the organism causing cavernous sinus thrombophlebitis, Staphylococcus aureus is the most common. As mentioned above, it is the so-called septic cavernous sinus thrombophlebitis which usually followed improper treatment of the infective foci. The other type is aseptic or marasmic form which may occur in the same type of cases as does thrombosis in the veins of the limbs or pelvis. Our case is definitely the infective one.

Since penicillin was the treatment of choice, in this case, in the first 3 days heavy doses of penicillin (5 million units per day) and streptomycin were used. However, the general condition did not improve. It seemed that the organism resisted penicillin treatment as mentioned in the literature.[2, 3] Therefore the antibiotics were switched to the combination of sodium cephalothin (Keflin) and tetracycline, and also kanamycin. We decided to use combinations of antibiotics without delay because the patient's life was threatened. The antibiotics were given before the result of hemoculture was known. On the day following the new regimen the hemoculture revealed Staphylococcus aureus, coagulase-positive which was resistant to penicillin, as we had thought, and was sensitive to the antibiotics described. So the regimen was continued for seven days and was changed again to chloramphenicol and tetracycline because of the danger of intoxication by potent antibiotics after prolonged use. The general condition then steadily improved.

In the case of McAllen and Shaw[3] as well as those of Dhir[1] and of Khare,[4] the organism was resistant to penicillin and was treated with tetracycline. In severe cases Dhir suggested the use of dexamethasone. In our case we did not use steroid until the infection subsided and we employed steroid (Prednisolone) and vitamin B_{12} to improve the ophthalmic conditions.

As collected from many reports, and as shown in this case, tetracycline plays the major rôle in the treatment of the cavernous sinus thrombophlebitis. Therefore in the treatment of such cases and of infections of the face, first reliance should not be placed on penicillin but on tetracycline, and the treatment should be changed to other antibiotics or to combinations to comply with results of culture and sensitivity test.

References :

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ธร็อมโบเฟล็บไอติส ของ คาเวอร์นัส ไสนัส เกิดจากเชื้อที่ดื้อ เพนิศิลลิน

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รายงานผู้ป่วย ธร็อมโบเฟล็บไอติส ของ คาเวอร์นัส ไสนัส หนึ่งรายเนื่องจากเกิดเป็นฝีที่หมูกขึ้นก่อนด้วยเชื้อที่ดื้อเพนิศิลลิน. ได้ใช้ยาต้านจุลชีพ เตตระ-ศัยคลิน, เคฟลิน, และ คานามัยศิน ร่วมกัน, ซึ่งได้ผลดีมากและผู้ป่วยหายเป็นปรกติ. ผู้รายงานมีความเห็นว่า เนื่องจากในปัจจุบันนี้พบบัคเตรีที่ดื้อต่อ เพนิศิลลินได้เสมอ ดังนั้นในรายที่เป็นฝีที่หน้า ควรเริ่มต้นการรักษาด้วย เตตระศัยคลิน ก่อน แล้วทำการตรวจเพาะเชื้อและหาความไวของเชื้อต่อยา เพื่อเป็นแนวทางการรักษาต่อไป.