

# OSTEITIS — A CASE STUDY

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## OPSOMMING

Hierdie is 'n gevalstudie van 'n kind met osteïtis in beide die linker humerus en regter femur. Die pasiëntjie het baie pyn en ongemak verduur. Hy was byna vier maande in die hospitaal, het vier operasies ondergaan en was vir 'n lang tydperk in 'n gipsspica verpleeg.

Osteïtis is inflammasie van beenweefsel wat dikwels by kinders voorkom en begin met 'n besering aan 'n groeiende langbeen. Gewoonlik sal die besering spontaan genees maar indien die kind 'n septiese fokus het kan bakterieë wat deur die bloedstroom vervoer word 'n abses veroorsaak.

Dit is noodsaaklik dat kinders onmiddellik behandeling ondergaan vir enige septiese fokus, en dat 'n hou aan die bokant van 'n groeiende langbeen in 'n ernstige lig beskou word.

## THE CHILD

At first it was thought to start this case study by saying: *this is a case of osteitis found in a caucasian boy aged 9 years, admitted to the Children's Ward in January 1981, etcetera*. This caucasian was however a rather precocious little boy, herein called Jack, whose plaintive cry of *Sister bring me a bottle, Sister scratch my back, Sister can I have some drops for pain* must have been heard by the night and day staff at intervals over a period of five months. So I am going to commence in a far more informal manner by telling you about him and how he came to us with an original diagnosis of septicaemia.

Jack came from a happy, stable home and loved his mother and his stoic stepfather, both of whom worked all day. He had no brothers or sisters, but innumerable cousins, grandparents and aunties who were all very attached to him. This probably explains and excuses his rather demanding manner whilst in the children's ward.

## OSTEITIS

Osteitis is inflammation of bone tissue and Jack presented with a typical picture of this disease. It occurs commonly in children, particularly boys between the ages of 3 and 10 years old. This is the peak accident and injury age group, according to statistics released in the United Kingdom in 1971.

Osteitis starts when a bone is in-

jured, particularly the growing end of a long bone, that is the epiphysis, which is rich in blood and rapidly forming bone cells. When the height of a 3 year old child is compared to that of a 10 year old, one can realise the terrific growth of bone which takes place in those years. When the epiphysis is injured, bleeding occurs, a blood clot forms in the bony tissue and external bruising of the skin could possibly be seen. If the blood clot in the bone tissue does not disperse a serious condition arises, as the rapidly growing bone cells enclose it into the bone causing severe pain. In a perfectly healthy child with no focus of infection, this clot will cause no further harm but gradually disperse.

In a child with septic tonsils, boils, septic scratches or bites or a *bad* tooth, bacteria from the septic focus can be carried through the bloodstream and settle in the blood clot which is an excellent medium for growing bacteria. The blood clot thus becomes infected, the bone tissue inflamed and an abscess forms. The infected area becomes very painful and swollen and the child develops a rapidly increasing and persistent pyrexia. If this condition is undiagnosed and untreated, bacteria spread from the epiphysis into the nearest joint, causing septic arthritis. If the condition is still not treated, the capsule of the joint is destroyed. Dislocation or complete destruction of the joint can occur.

## THE BEGINNING

Jack was injured at the beginning of January whilst fighting with a big boy at school. He received a karate chop on his left upper arm, just below the shoulder joint, in fact right on the upper epiphysis of the humerus. He suffered pain and bruising but not sufficient to cause his mother to seek medical advice or X-Rays.

The pain in Jack's arm persisted, and within a week he became very sick, with persistent pyrexia. He was treated by his own doctor for malaria, staying at home from school for another week. The arm was becoming more and more painful and swelling started in his left shoulder joint. At the same time an area of his right thigh became painful and swollen as the epiphysis of his right femur near the hip joint was also infected. By now his doctor was alarmed as Jack was very sick and he was sent to casualty with a diagnosis of septicaemia.

Just before his injury Jack was booked to have a decaying upper molar extracted. His visit to the dentist never took place and the tooth must have acted as the septic focus causing the osteitis. Jack was also rather underweight at 21 kg., the normal weight for a boy of 9 years being about 30 kg. He had a pernicky appetite and obviously had little natural resistance to infection.



## FIRST ADMISSION

After admission to the Ward in January, blood was taken to exclude typhoid, rickettsia, brucella, rheumatic fever and malaria. All tests were negative. Other blood tests showed a normal clotting time, excluding haemophilia which can also present with swollen joints following an injury. Jack's haemoglobin was 11,2 g %, and the Erythrocyte Sedimentation Rate 55, the normal for a child being 1-15. The leucocyte count was greatly raised showing that a severe bacterial infection was present. On admission there was protein in his urine, his liver was slightly enlarged and X-Rays confirmed that there was osteitis of the left upper humerus. The right upper femur was reported as normal. (See Figure 1 and 2). His axillary temperature was 38,7 and

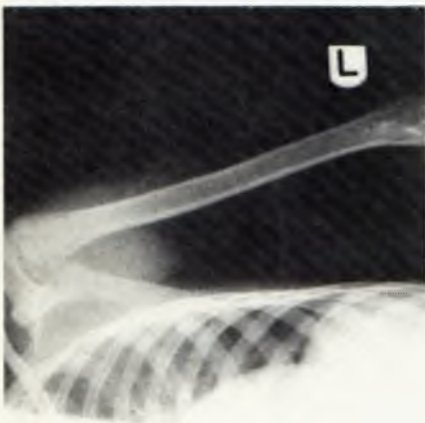


Figure 1. Left shoulder and humerus showing Osteitis. 15.1.81.



Figure 2. Left and right hip joints and femurs reported as normal. 15.1.81.

every movement he made caused such pain in his arm and leg that he sweated profusely. However, despite this, he kept a lively interest in

his condition and asked the doctors and nursing staff innumerable questions.

In the next three days Jack went to the operating theatre three times. He had an abscess of his left humerus aspirated, then incised to make a series of small drainage holes in the length of the bone. Two corrugated drains were stitched in and the wound was closed with a dry dressing and crêpe bandage. His arm was nursed resting on a pillow.

Despite the radiologists report that his right femur showed no abnormality an area over the upper epiphysis was incised, an abscess drained and drainage holes made in the length of the femur. Two corrugated drains were left in the wound and a plaster of paris spica was applied from his chest. His right leg was completely immobilised but his left leg was free from the knee joint. Pus from the abscesses was sent to the laboratory for microscopy, culture and sensitivity.

On return from theatre after the last operation Jack had a infusion of Dextrose 5% in water into his right arm so that for the next four days he was completely immobilised. He also suffered from a very troublesome and severe frequency of micturition due to a urinary infection. During the next three days he had a persistent pyrexia, and was kept as comfortable as possible with aspirin one tablet, four-hourly and tilidine HCl drops nine, three to six-hourly for pain. Intravenous antibiotics were commenced with ampicillin 500 mgm, six-hourly, then cloxacillin 500 mgm with sodium cefazolin 250 mgm, six-hourly when ampicillin failed to reduce his pyrexia after two days.

After five days the lastmentioned regimen was discontinued as ineffective and erythromycin 250 mgm by mouth was given. Jack had very poor veins and his infusions were renewed five times in five days, causing him even more discomfort.

A week following his operation, a window was cut in the plaster of paris spica and the drains in Jack's leg shortened daily by 1-1,5 cm. There was a great deal of pussy discharge which gradually decreased. His dressings were done four-hourly. After two weeks, Jack's stitches were removed and his screams that

day must have echoed throughout the hospital. The stiches were very small and had become imbedded in the skin and were removed with great difficulty. The drains in his arm were also shortened daily and that wound cleared up and healed well after removal of the stiches (see Figures 3 and 4).



Figure 3. Left humerus showing drainage holes, 3 weeks after operation.



Figure 4. Right hip and femur showing drainage holes and calcification commencing 3 weeks after operation.

Jack's pyrexia however persisted. Pus from his abscesses grew staphylococcus aureus which was sensitive to cloxacillin, ampicillin and sodium cefazolin. All these antibiotics had been given with no effect. The doctors decided to try sodium fucidate, an extremely effective antibiotic, particularly in the treatment of osteitis. The twelve vials ordered cost R200,00 and was obtained through a local pharmacy. The antibiotic was an American product packaged and distributed in South Africa through a firm in Johannesburg.



This antibiotic was given intravenously as a side drip, the 500 mgm prescribed being divided into three doses in twenty-four hours. The pyrexia resolved gradually and after twelve days, the intravenous therapy was discontinued and he had fucidate capsules by mouth, 500 mgm, three per day for eight days.

Four weeks after its application the plaster spica was removed but Jack was not allowed out of bed for another three days. Thereafter he was allowed to get up in a wheel chair. How he delighted and plagued us, dashing up and down the ward in his chair. He was then taught and allowed to walk with crutches and was allowed to go home. His wounds were dry but his temperature was not completely settled. His parents were told to bring him back for a check-up and control X-Rays in four weeks.

## SECOND ADMISSION

Jack was re-admitted to the children's ward in March, following X-Rays of his right hip joint (Figure 5)



Figure 5. Right and left hip joints — right acetabulum partly destroyed and hip dislocated. 23.3.81.

which showed that the bacterial infection had partly destroyed the capsule of the hip joint, causing dislocation and also partly destroying the acetabulum. He was a-pyrexial, thin and pale but, apart from being unable to walk, he was as charming, cheeky and naughty as any normal little boy.

Jack was booked in theatre for an open reduction of his dislocated hip. He was prepared in the same way as for a Charnley's operation. Blood tests were repeated. His haemoglobin was 12,3 g %, the clotting time normal and E.S.R. 33. Blood

was taken for compatibility and one pint of blood was reserved for him. X-Rays of his right and left hip joints, left humerus, pelvis, chest and both shoulder joints were repeated.

Four days later an open reduction of the dislocated right hip was done and two Kuschner wire pins were inserted through the head of the femur. Another plaster of paris spica was applied. Jack was so small that the wires went right through the head of the femur into the pelvic cavity (see Figure 6). This caused him no problems but caused

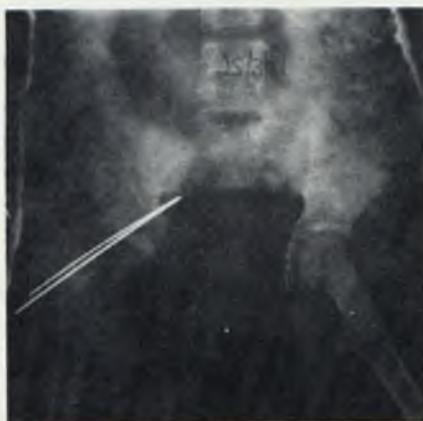


Figure 6. Right hip after operation in plaster of paris with Kuschner pins in position. 25.3.81.

the orthopaedic surgeon a lot of worry. He would not allow Jack to go home for the six weeks of bedrest needed in case the pins perforated his gut. So Jack remained quite happily in the children's ward.

The day following his operation Jack's drainage was removed and his intravenous infusion discontinued. As his Hb was 9,9 % no blood transfusion had been necessary and for a week he made good progress and was a-pyrexial. Then an increasing and persistent pyrexia made the doctors recommence in intravenous infusion. Intravenous fucidate 165 mgm was given eight hourly for twelve days with a good result. Other antibiotics were not tried this time.

Routine nursing care was given during his stay which was uneventful, apart from the occasional problem with his bowels. Jack was so persisting and naughty with his request for glycerine suppositories that he was threatened and eventually given a small fleet enema. This was believed, would *fix* him — not so, he liked it. After that he was filled daily with large amounts of

dried fruit, which were sent by his mother at the nurses' request. On the orthopaedic surgeon's instructions Jack was allowed to be moved from his bed onto a trolley. He was pushed around the ward, to the public telephone and shop so that he wouldn't become too bored, being forced to stay a further six weeks in hospital.

After four weeks Jack had a window cut in his spica and one of the pins was removed. His stitches were removed and his wound was dressed four-hourly with Eusol as there was a considerable amount of pussy discharge. The wound gradually became cleaner but there was still a pin in situ and pus was draining around it into the spica. The smell became very foul and Jack persuaded the doctor to remove the pin and the plaster a week earlier than anticipated. His right leg was put into skin traction with a 2 kilogram weight for the next week and he was given quadriceps exercises by the physiotherapist. Nine days later he was allowed up in a wheel chair but without bearing any weight at all on his right leg. He was allowed to go home for a further four weeks of bedrest, followed by a visit to the doctor for a check-up and further X-Rays. He could commence walking again if the X-Rays were satisfactory.

## CONCLUSION

The author believes that this case study is a lesson to nurses to teach all mothers to be sure that their children have no bad teeth or other septic focus and that a blow on the upper end of growing bones should be taken seriously and persistent pain not ignored. Mothers must also see to it that children are given and made to eat a well balanced diet. This will help them to build up a natural resistance to infection, so that no child need suffer as much as the little patient Jack.

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