臨　　床

A ROENTGENOLOGICAL OBSERVATION OF AN ASEPTIC BONE NECROSIS IN THE BONY NUCLEUS OF CAPITULUM HUMERI

by

Toshiharu Kotera, M. D.

Vicedirector of Todaiji Seishi-en (Institute for Crippled Children)
(Director: Dr. S. Nakai)

and by

Nobuyoshi Yanai, Tatsuro Sakurai and Masakiyo Shiroma

From Orthopedic Division, Kyoto University Medical School
(Director: Prof. Dr. Eishi Kondo)
(Received for Publication Jun. 28, 1959)

INTRODUCTION

Of a so-called "aseptic epiphyseal bone necrosis or spontaneous bone necrosis", the following diseases are most frequently encountered: Osgood-Schlatter' (1903), Alban-Köhler' (1908), Thiemann' (1909), Calvè-Legg-Perthes' (1909), Kieneöck' (1910), Freiberg-Köhler' (1914), Scheuermann' (1921), vertebra plana Calvè' (1925), and Dietrich's disease (1932). Furthermore, similar change is observed in calcaneal apophysis, patella and neck of femur, and in some of osteochondritis dissecans. This kind of change was first found by Panner (1927) also in the bony nucleus of capitulum humeri, but, since then, the case reports have been relatively few (less than 20 cases). In this report, a case of 7 years old male subject is described for 26 months since the onset, with special reference to the X-ray findings.

DESCRIPTION OF THE CASE

1) Family history

Parents are healthy. Elder sister has severe right scoliosis of dorsal vertebra. None of the family has tuberculous disease.

2) Patient is a male parson of 7 years and 9 months old and a pupil of an elementary school.

a) Early history; Nothing particular.

b) Case history; Since Sept. 1956, the patient had felt a light pain in the lateral side of the left elbow-joint on bending it, by which the bend of the joint was considerably limited, but his usual daily life was not disturbed. On 7 of Oct. 1956, he consulted our clinic.

c) Present state;

General finding: Nothing particular. Local finding: No redness, swelling, muscle

atrophy and deformity in the left elbow joint.

Press tenderness of the articular space, especially on the part of capitulum radii, but not on the epicondylus medialis et lateralis. No abnormal sound on the articular movement. Extension of the joint is normal, while the flexion is slightly limited. Supination and pronation of the left forearm is normal and no abnormality of the sense is found.

Fig. 1

Fig. 2

X-RAY FINDINGS

Oct. 10, 1956; the bony nucleus of the left capitulum humeri was not flattened and the size was the same as that of the opposite side, while the pattern showed a fuzzy appearance as a whole and the central part was almost completely decalcified. The pattern of the right side was normal. The proximal bony nucleus of radius was clearly seen in the left side, but not in the right side (Fig. 1~2).

Fig. 3

Fig. 4

Nov. 9, 1956; The pattern showed almost similar but somewhat thicker appearance as before. In the left wrist joint, small bony nucleus was found only in the hamate, lunate and capitate, but not in the other carpal bones. The distal bony nucleus of radius was observed but that of ulna did not appear (Fig. 3~4).

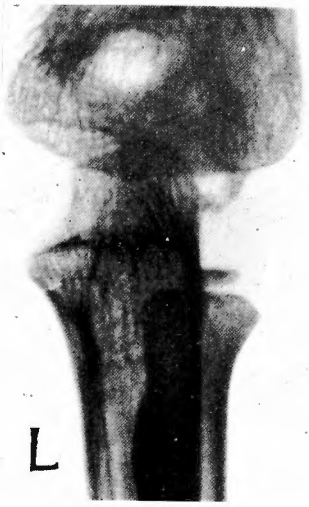

Fig. 5

Fig. 6

Dec. 26, 1956; The bony nucleus preserved the same form as before and did not appear to have flattened. The fuzzy pattern disappeared, leaving the central decalcified region surrounded by the area of increased density. The contour showed no irregularity. The proximal bony nucleus of the right radius was faintly observed (Fig. 5~6).

Fig. 7

Fig. 8

Jul. 25, 1957; The bony nucleus appeared to reduce its size and slightly flattened. The distal hemisphere showed a scattered insular appearance of increased density, from which the proximal hemisphere of the like appearance was separated by an

intervened transverse area of lessened density. The contour of these calcifying area was ragged (Fig. 7).

Dec. 25, 1957; The nucleus reduced its size and the distal hemisphere was observed as a uniformly dense area, the contour of which became less ragged. The insular pattern, however, was still preserved in the central upper region (Fig. 8).

Fig. 9

Fig. 10

Dec. 9, 1958; The nucleus was of the same size as that of the right side and the contour was uniformly smooth. Roughly speaking, the pattern might be said to be that of the normal ossification nucleus, indicating that the repairing process was almost completed (Fig. 9～10).

Clinical course; From the roentgenological point of view, the injured bone was almost completely repaired to normal in the lapse of 24 months, whithout any clinical symptom left. In this case, no treatment was applied but prohibiting the burden on the suffered part.

DISCUSSION

In this case at his age 7 years and 10 months, the carpal bony nucleus is found only in the capitate, hamate and lunate of the left side. The distal nucleus of ulna is not yet observed. The age at which the bony nucleus appears in each carpal bone may be summarized as follows in the light of the literatures: distal nucleus of ulna (6-9 years—Spalteholz; 7 y.—Rückensteiner), multangulum majus et minus (5-6 y.—Yokokura; 3-6 y.—Spalteholz), triquetrum (late 3 y.—Ito; early 5 y. -Saigo; 4-5 y.—Yokokura; 2-5 y.—Spalteholz), naviculare manus (6y.—Rückensteiner, Ito; 8 y.—Saigo; 7y.—Yokokura), and pisiforme (8-13 y.).

In comparison with the results above mentioned, the delayed appearance of the bony nucleus may be clearly noticed in the multangulum majus et minus and triquetrum of this case. The proximal nucleus of the radius is observed in the left side, but not in the right side.

From the fact that the delayed development of the bony nuclei is observed in

this patient and, furthermore, his sister has been suffered from severe scoliosis, the etiology of this case may be ascribed to a trivial trauma in the capitulum humeri of the patient who has had the bone system of congenitally minor resistance.

X-ray examination reveals that the complete repair is accomplished in the nucleus of the capitulum humeri in the lapse of 26 months without any other treatment than prophibiting the burded on it.

That easier and more complete healing is observed in this case than in Perthes' disease may be understood in the light of the fact that elbow joint is not so much burdened as femoral joint in daily life.

Such an easy healing and besides the slight subjective symptom appear to promise its good prognosis.

Owing to the slight clinical symptom, however, the diagnosis of this disease must be done by X-ray examination, otherwise it may happen to be skipped, by which a relatively few case report of this disease could be explained.

SUMMARY

1) A case of aseptic bone necrosis is reported in the bony nucleus of left capitulum humeri of a boy, 7 years and 6 months old.

2) The case has been followed roentgenologically for 24 months from the onset to the natural complete repair, in which no remarkable flattening or deformity of the nucleus has been observed presumably because of the early diagosis.

3) The delayed development of the bony nucleus is shown in the left multangulum majus et minus, triquetrum and proximal nucleus of the right radius.

4) The natural healing may be possible in the lapse of some 2 years only by prohibiting the burden on elbow joint.

5) The possibility that this disease is liable to be skipped owing to the localisation and mild clinical symptom is suggested and the first importance of Y-ray examination is stressed in its diagnosis.

Literature

1) Schinz-Boensch-Friedl : Lehrbuch der Röntgendiagnostik. 4. Aufl. 1939.
2) Yokokura, S. : Handbook of X-ray diagnosis. 1953.
3) Tanida, G. : A case of an aseptic bone necrosis in the bony nucleus of capitulum humeri. Seikei-geka, **4**, 140, 1953.
4) Koyake, S. :A case of an aseptic bone necrosis in the bony nucleus of capitulum humeri. Seikei-geka, **6**, 292, 1955.
5) Matumori, S. & Simoda, K. : A case of an aseptic bone necrosis in the bony nucleus of capitulum humeri. Seikei-geka, **9**, 543, 1958.

和文抄録

上腕骨小頭骨核に見た無菌性骨壊死症のレ線学的追求所見

東大寺整肢園（中井慎一 園長）
小寺 寿治
京都大学医学部整形科外学教室（主任：近藤鋭矢教授）
柳井 悦嘉・桜井 達良・城間 政清

1） 満7才9ヵ月の男児の左上腕骨小頭骨核の無菌性骨壊死症の1例である．

2） 発病間もなくより2年2ヵ月に亘つて主としてX線学的に本症例の経過を追求し，その全経過を通じて，骨核の破壊，修復の推移を詳細に観察し得たが，その間著明な扁平化を来したり，特に変形の著しい時期を見なかつたのは，発見が初期であつた事に依る．しかも完全修復迄その所見を明らかになし得た事からして，本症例に於ては本症の発病より治癒迄の全経過を観察し得られた．

3） 本症例は発病より恢復に至る迄負荷を免じた以外には何等特別の加療をしていない．故に本症は免荷さえ守られるならば約2年間で自然治癒するもので，従つて予後は極めて良い．

4） 患児の手根骨中，大，小多角骨，三角骨の骨核発現は正常より遅延している．且つ健側の橈骨近位骨端核の発現も遅延していた．

5） 本症はその臨床所見や，肘関節という部位的関係から，しばしば見逃されているのではないかと思われる．従つてこの年令の児童の肘関節の訴えある時は積極的にX線検査が望ましい．

6） 本児の姉は高度の脊柱側彎症患者である事より考えて，本児には骨系統に先天的に Loucs minoris resistentiae があつたものと思われる．