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Osteoarticular sequelae of small pox: a case report

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ABSTRACT

Small pox has been eradicated completely but its unique pathology and sequelae still come across in routine clinical practice. Osteoarticular changes following small pox infection has been elaborated in literature. We present a similar but rare patient with osteomyelitis variolosa and joint deformity involving elbow, wrist joints and humerus fracture. The condyles were typically elongated as central portion of distal humerus absorbed. Fracture united uneventfully following stabilization with dynamic compression plate and bone grafting. Patient showed satisfactory elbow function at the end of last follow-up.

1. Introduction

Small pox has already been eradicated but suffers of its consequences are still living with disability and facial stigmata. Osteoarticular complication following small pox in young children has been mentioned in literature. Osteomyelitis variolosa is accepted terminology for the skeletal involvement which appears during the recovery period from the smallpox eruption. Small pox virimea damages epiphysis and growth plate causing subsequent joint deformity^[1]. Deformities consisted of bilateral, symmetrical osteomyelitis with arthritis predominantly affecting upper limb. The clinical and radiological features of osteomyelitis variolosa has been very well described by Cockshott and MacGregor in their reports^[2]. We report a case of osteomyelitis variolosa and associated deformity which was further complicated by fracture. Operative intervention was done to treat fracture and surprisingly fracture union was uneventful.

2. Case report

A forty one-year-old right handed Indian male school teacher presented to our Outdoor Patient Department NSCB Medical College Jabalpur India in October 2004 with a history of fall. He sustained fracture of his left arm.

General examination revealed residual facial stigmata of variola pustules. There was limp in gait. On local examination his left humerus had abnormal mobility and bony crepitus. Transmitted movements were lost. Movement at left elbow could not be elicited as it was very painful. He had deformities over elbow, wrist, left hand and ankle. Right elbow was grossly unstable and had 20 degree fixed flexion deformity with further flexion up to 110 degree. His both wrists were severely deformed and unstable. Movements at both the wrist joint were limited. His left middle finger was short. Movements at small joints of the hand were normal with hand grip. He demonstrated good dexterity and ability to write fluently with his right hand. There was normal sensation including touch and temperature. In the past history he revealed about epidemic of small pox which had occurred when he was seven year old. Two of his elder siblings contracted disease but recovered without any residual deformity.

The haemogram showed its parameters within normal limits with ESR 16 mm at the end of first hour. Blood chemistry clotting profile Liver and Kidney profile revealed no any abnormality.

Antero-posterior radiograph of right elbow joint demonstrated bone absorption of the central portion of the trochlea and capitulum, with elongation of both the medial and the lateral condyle (Figure 1). Shortening and deformity radius was also evident. Lateral radiograph revealed maintained congruity of right elbow joint. Radiograph of wrist showed disruption of distal radio-ulnar joint and radio-carpal derangement (Figure 2). Radiograph of left arm showed fracture of humerus in distal 3rd of diaphysis with milde degree of bone absorption of trochlea and

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capitulum (Figure 3). Left wrist radiograph showed radio-carpal derangement and deformity with shortened third metacarpals of hands (Figure 4) and secondary arthritic changes in third metacarpophalangeal joints.

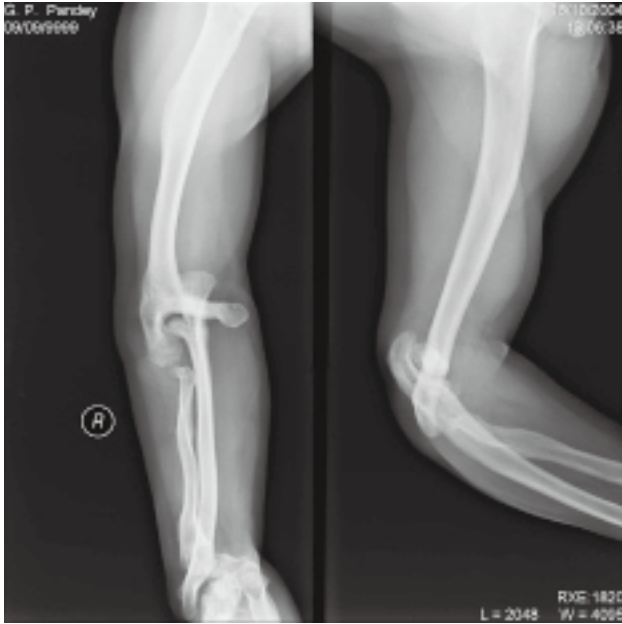


Figure 1. Antero posterior radiograph of arm and forearm of right upper limb of forty one year old patient who contracted small pox at the age of 7 year. The figure reveals absorption of trochlea and capitulum with elongation of condyles.



Figure 3. Radiograph of left arm and forearm shows fracture of distal third of humerus with radio-carpal anatomical disruption.



Figure 2. Antero posterior radiograph of wrist of forty one year old shows radio-carpal derangement with distal radio-ulnar disruption.



Figure 4. Radiograph of wrist and hand shows shortening of third metacarpal with third carpometacarpal arthritic changes.

The patient was operated under general anesthesia. Open reduction internal fixation with bone grafting was performed. Fracture was fixed by 7 hole dynamic compression stainless steel plate which had greater biomechanical stability as compared to nail device for distal humerus fracture (Figure 5). Post operative recovery was uneventful. He regained his previous functional status within 12 weeks and returned to

his job.



Figure 5. Post operative radiograph shows good anatomical reduction and stabilization with plate.

3. Discussion

It has been 30 years since WHO declared world free from small pox^[3]. Osteoarticular sequelae of small pox are still being reported. Recent reports which are published in literature are from tropical countries where small pox epidemic was more severe^[4,5]. Small pox vaccination has also been reported to cause bone lesions^[6]. Osteomyelitis variolosa is rare complication of smallpox and has been estimated to occur in 0.25%–0.5% of all patients and 2%–5% of affected children^[1,2]. Most of osteoarticular complications of small pox involved elbow followed by wrist, hand and ankle. Skull, spine, pelvis bone have also been reported.

Few autopsy based study formulate pathophysiological hypothesis which demonstrates pathological foci in the bone marrow of victims of small pox^[7,8]. Eventually, these lesions lead to destruction of the perimetaphyseal structures, epiphyseal separation and morphological changes in diaphysis^[9]. Subsequent deformities may result from reparative ossification, distortion and cessation of the longitudinal growth of bones, probably due to destruction of physeal growth plate. Abnormal mechanical axis and juxtra deformity stress riser at bone could be the explanation for fracture as in our case.

Osteomyelitis variolosa deserves to be differentiated

from pathologies having similar clinical and radiological presentation. Bone lesion needs to be differentiated from infantile hyperostosis disease and salmonella osteitis in sickle cell anemia^[10]. The radiological changes as depicted in our case must not be confused with those seen in leprosy^[11], which will have unique clinical picture along with bony changes. Differential diagnosis of deformities of small pox includes achondroplasia, dysplasia, sequelae of septic arthritis^[4,12,13]. Fracture union did not show any abnormality despite gross bony alteration was a surprise element. Our patient recovered well once again from a sequelae of historical devastating pathology and reminds us of all those who contributed in eradication of small pox especially Edward Jenner.

Conflict of interest statement

We declare that we have no conflict of interest.

References

- [1] Cockshott P, MacGregor M. Natural history of osteomyelitis variolosa. *J Fac Radiologists* 1959; **10**: 57–63.
- [2] Cockshott P, MacGregor M. Osteomyelitis variolosa. *Q J Med* 1958; **27**: 369–87.
- [3] World Health Organization. Smallpox.[Online] Available from: <http://www.who.int/mediacentre/factsheets/smallpox/en/>[Accessed on August 17, 2010].
- [4] Anil arora, Agarwal A, Kumar S. Osteomyelitis variolosa – report of two cases. *J Orthopaedic Surg* 2008; **16**(3): 355–8.
- [5] Andrus M, Jayan KG. Osteomyelitis variolosa : a case report; *Rheumatol Int* 2009; DOI: 10.1007/s00296-009-1272-1.
- [6] Cochran W, Connolly JH, Thompson D. Bone involvement after vaccination against smallpox. *Br Med J* 1963; **8**: 285–7.
- [7] Brown WL, Brown CP. Osteomyelitis variolosa. *J Am Med Assn* 1923; **81**: 1414–5.
- [8] Chiari H. Ueber osteomyelitis variolosa. *Beitr Z Path Anat* 1983; **13**: 13–31,
- [9] Nathan PA, Nguyen-Buu-Trung. Osteomyelitis variolosa: report of a case. *J Bone Joint Surg Am* 1974; **56**: 1525–8.
- [10] Vincent REJ, Seynhaeve V. Bone lesions due to small pox *Arch Dis Child* 1964; **39**: 591–7
- [11] Lentz MW, Noyes FR. Osseous deformity from osteomyelitis variolosa: a case report. *Clin Orthop Relat Res* 1979; **143**: 155–7.
- [12] Mohindra Y, Tuli SM. Osteomyelitis variolosa stimulating achondroplasia. *Indian J Pediatr* 1969; **36**: 48–9.
- [13] Gupta SK, Srivastava TP. Roentgen features of skeletal involvement in small pox. *Australas Radiol* 1973; **17**: 205–11.