Case Report

Obstetric bilateral shaft femur fracture in an arthrogrypotic newborn

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Abstract:
The risk of obstetric femoral fracture increases in the setting of associated congenital deformities of the lower limbs. The presented case underlines the importance of anticipating associated deformities to avoid the complication of fracture. In the presented case, deformities of lower limb as part of arthrogryposis multiplex congenita posed increased stresses over the both femoral diaphyses leading to fracture. The case had other well described predisposing factors also like breech presentation and delivery by caesarean section.

Key words: Birth Injuries, Femoral Fractures, Arthrogryposis /complications, Infant, Newborn

Case report:
The case, a female newborn was presented to us on third day of the delivery, referred from paediatrics intensive care unit as a case of respiratory problems with multiple congenital deformities. It was a full term baby delivered through caesarean section and had breech presentation as per the records. She was the second child of otherwise normal parents and sibling. The baby had both her knees fixed almost in extension with only 10° of knee flexion passively possible along with bilateral clubfeet. Both of her thighs revealed swelling and crepitus on palpation. Her hips could not be examined for associated deformities like subluxation or dislocation clinically as relevant tests require knee flexion in most parts. Radiographic evaluation of pelvis and lower limb showed bilateral shaft femur fractures along with associated deformities like bilateral dislocated hips. Other clinical feature included thumb-in-palm deformity on the left side, friable skin, poor feeding and respiratory tract infection. Provisional diagnosis of Arthrogryposis was made based on the clinical phenotypic characteristics. Further evaluation by nerve conduction studies, electromyography, muscle biopsy or genetic assessment in order to determine underlying disorder was declined by the parents. There were no intra abdominal abnormality detected and no evidence of fractures elsewhere in different stages of healing such as in osteogenesis imperfecta. The baby was under treatment for the lung infection in the paediatric unit. Because of her friable skin, initial splintage was done with card board make-do splint covered with cotton webriol padding to check movement induced pain stimulus. Her both extended knee assured little movement of fracture site thus providing additional splintage. The child was periodically reviewed specially in consideration to pressure trauma to skin with the splintage provided. The fracture united well and confirmed clinico-radiologically in a course of 3 week follow up. The
baby then underwent gradual passive stretching therapy for her knees and corrective casts for clubfeet. However her stiff knee was a hurdle in conservative management of bilateral dislocated hips and bilateral clubfeet as both require knee flexion as part of their treatment. Bilateral clubfeet were managed with below knee corrective casts as conventional above knee casts in knee flexion was not practically feasible. The baby showed good response to supervised physiotherapy as her knee flexion improved and clubfeet showed gradual correction. The baby was followed up at 3 weeks, 6 weeks and 3 months follow up. During the fourth month the baby expired due to certain cardio-respiratory complication. There were visceral anomalies that required to be assessed and diagnosed before the sad demise of the child.

Discussion

Arthrogryposis Multiplex Congenita is a group of disorder with common phenotypic features involving multiple joint contractures. Almost 300 different unrelated disorders are described in literature. Obstetric birth injuries of musculoskeletal system are uncommon injuries in a new born. Large fetus, shoulder dystocia, breech presentation, caesarean section, instrumented delivery and forceful extraction are common risk factors for the same. While long bone fractures are rare injuries of musculoskeletal system, bilateral femoral fractures are limited to very few case reports in the literature. Increased incidence of perinatal fracture has been reported in cases with arthrogryposis with femoral fractures and epiphyseal separation being common. This was related to relative stiffness and obstructed delivery. Most of the fractures unite well with various strapping or splinting techniques. Cases with Arthrogryposis multiplex congenita with their varied clinical profile and prediction for associated limb deformities compound the problem of getting musculoskeletal injuries. The cases particularly have contracture deformities in association with bilateral subluxated/dislocated hips, bilateral congenital foot deformities like clubfeet, and knee contracture problems. Mostly knee deformity includes flexion contracture that lead to various patterns of femoral fractures and epiphyseal separations. But in our case both of the knees were fixed in extended position. The stiff knees in extension in association with bilateral clubfeet and dislocated hips makes delivery of newborn difficult and shear forces across the slender femora leads to fractures. Thankfully the both extended knee in our case acted as natural splintage for femoral fractures which unites uneventfully during the followup. This, to our knowledge is first of such case report. One similar Japanese case report had Nemaline myopathy as causative factor.

References

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