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Congenital Genu Recurvatum in a Boy: First Observation in the Pediatric Surgery Department of the Donka National Hospital

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Abstract

We report the case of a newborn male, admitted on his first day of life for a left knee hyperextension of 60 degrees. The diagnosis of isolated reducible left congenital genu recurvatum, classified as Leveuf and Pais stage A, without ipsilateral quadriceptal hypoplasia was made. The orthopaedic treatment combining gentle stretching-reduction manipulations and anterior splints with the knee flexed at 90° was applied with good progress after four weeks.

Introduction

Congenital genu recurvatum is an orthopaedic condition rarely encountered in current practice [1]; its incidence is 1 in 100,000 live births in the literature [2-5]. The etiology is malformative, with a malpositional cause in less severe forms. It can be diagnosed antenatally using imaging (ultrasound), but its accurate diagnosis is clinical in the delivery room [4]. Treatment options include physiotherapy, orthopaedic methods and surgery [4]. First-line treatment remains orthopaedic, and early treatment can favourably improve the functional prognosis of the affected knee [6]. We report the case of a genu recurvatum isolated in a newborn male on D1 of life, reducible, treated with success by the orthopaedic method in our pediatric surgery department of the National Hospital of the Conakry University Hospital. Through this case, we want to discuss the epidemiological, diagnostic, therapeutic and evolutionary aspects of congenital genu recurvatum.

Clinical Case

MD: A new one day old male received in outpatient consultation of Pediatric Surgery at the Donka National Hospital (HND) of the Conakry University Hospital for congenital hyperextension deformity of the left knee. The newborn was born in the maternity ward of the Coyah Regional Hospital 50km from

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the capital at term by cesarean section for breech presentation. The mother was a primiparous 18-year-old with no family consanguinity. A third-trimester obstetric ultrasound revealed malposition (breech presentation) of the fetus without any other abnormality. The physical examination of the newborn revealed a satisfactory general condition; the conjunctivas and integuments were form coloured, and he was toned and awake with normal archaic reflexes., afebrile at 36°2C, pulse 120 pul/min, Fr: 40cr/min. Birth weight was 2800g, BW: 34 cm; T: 50 cm. On inspection of the left pelvic limb, we noted hyperextension of the left knee joint of 60° at rest (Figure 1), with flexion of the leg on the thigh and the tip of the toes oriented on the abdomen. The patella was palpated with a regular appearance and in a physiological position. The contralateral limb was unremarkable. The Barlow and Dortolani manoeuvres eliminated a bilateral hip dislocation. The remainder of the examination was ordinary. The absence of bony anomaly and bilateral dislocation of the hips was noted on the frontal x-ray of the pelvis (figure 2). The left knee x-ray allowed this anomaly to be classified as Leveuf and Pais stage A (Figure 3).

At the end of the somatic examination, we mentioned an isolated knee recurvatum (without associated malformations) of probably positional aetiology as a diagnosis. Our therapeutic approach consists of gentle manipulations and stretching of the affected knee associated with anterior posture cast splints on a knee flexed to 20 degrees in the first session (Figure 4). During each weekly check-up, we remove the cast and clinically check the knee, followed by a gradual increase in the flexion angle of the knee joint and refitting with an anterior posture splint. In four weeks (4 sessions), the knee adopted a normal position with normal mobility (passive flexion at 90°: Figure 5) and without active hyperextension (Figure 6).

The mother was pleased to see the deformity completely corrected and especially to be able to place her child on his back (Figure 7). After one year of follow-up, the child could stand up and walk a few steps, and there was no axial deformation of the knees.

Discussion

Genu recurvatum is defined as a pathological degree of hyperextension of the knee joint beyond 5 degrees accompanied by limited flexion (with displacement of the tibia on the femur [6]. It is an extremely rare anomaly in pediatric orthopaedics; its incidence is 1 in 100,000 live births in the literature [3,5,6,9]. The aetiology of this malformation is essentially malformation, with a malposition caused in less severe forms [4]; oligohydramnios would be another etiological factor of congenital genu recurvatum; it would be responsible for a reduction in the intrauterine space causing a packing disorder leading to the moulding of the fetus and subsequent poor positioning of the knee joint [6,7]. Severe forms fall within the framework of a polymalformative syndrome, such as congenital arthrogryposis multiplex, Down syndrome or Larsen syndrome. It can also be associated with musculoskeletal conditions such as congenital hip dislocation (most frequently associated) or club foot. Paralytic conditions such as meningomyeloceles are sometimes found. Rare familial cases have been described in the literature [4,5]. Knee recurvatum can be unilateral and isolated (good prognosis) or bilateral in 60% of cases (poor prognosis) [1]. In our clinical observation, it was a unilateral and isolated knee recurvatum with a breech presentation indicating cesarean section, which brings to mind a cause of malposition in our case. We have not encountered any familial cases among parents; no genetic testing has been

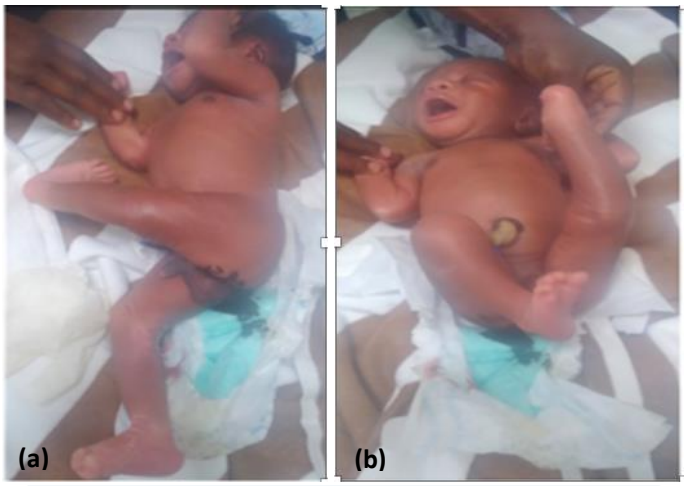

Figure 1 a&b: Genu recurvatum in pathological hyperextension.

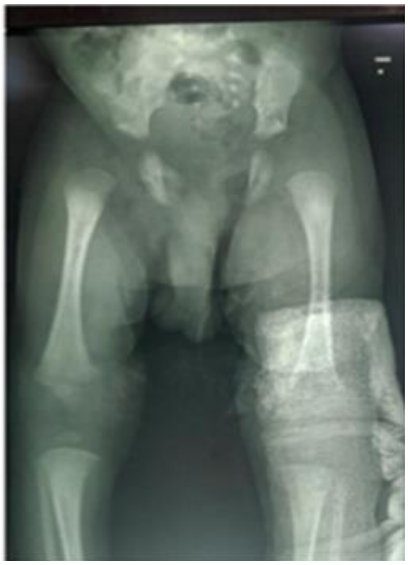

Figure 2: Normal frontal x-ray of the pelvis.

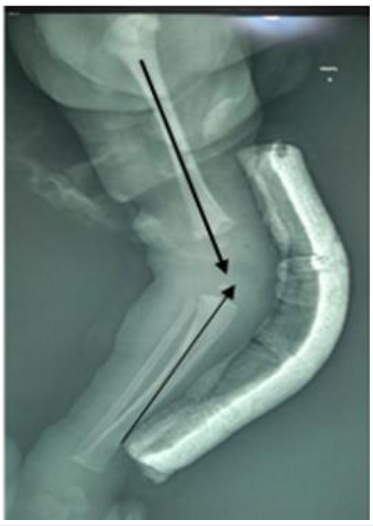

Figure 3: Lateral X-ray of Knee Stage A of classification Leveuf and Pais.

carried out in our work context. It is a pathology that affects girls more than boys, with a sex ratio of 3. In our case, it was a male newborn with a unilateral and isolated knee recurvatum (without anomaly), which is exceptional in the literature [1,3]. This is the first case of the boy in our hospital structure. In the past three years, there have been 2 cases of unilateral genu recurvatum, but they were girls. These cases were not the subject of scientific study; the files were incomplete.

The diagnosis of genu recurvatum can be raised antenatally by an examination of the lower limbs during an ultrasound evaluation of the fetus [6,8]. The accurate diagnosis of genu recurvatum remains clinical. It must be made in the delivery room in the face of hyperextension of the knee joint of more than 5 degrees with limited flexion. Our patient presented a deformation of the left knee with hyperextension of more than 20° (exactly 60 degrees at rest). Different pathological degrees are mentioned respectively (beyond 20° or even 90°) by specific authors [3,5]. The deformity of the knee anomaly can be reducible, recalcitrant or irreducible [5]. The simplest and most commonly used classification in genu recurvatum is that of Leveuf and pais [5]. It uses the outline of the axes of the tibia and femur on a profile X-ray image. These lines should intersect at the centre of the joint in Stage A (without dislocation), next to this centre in Stage B (with subluxation), and outside the joint in Stage C (with dislocation). The absence of femorotibial dislocation on the x-ray of our patient's knee allowed us to classify the deformity as Leveuf and Pais stage A. Ultrasound is a painless and safe valuable test in assessing genu recurvatum. Our clinical case allowed us to assess the normality, size, position and mobility of the patella; ultrasound makes it possible to follow the therapeutic progress without intra-articular effusion Lysis of the epiphyses, or physics, could be linked to traumatic reduction [4,5]. Our patient's prognosis was excellent because he presented a unilateral, reducible genu recurvatum, a very short admission time (within 24 hours of discovering the anomaly), and the absence of anomaly of the patella and quadriceps. The recurvatum degree is not correlated with the prognosis; the latter depends on several factors. Poor prognostic factors are agenesis of the patella, severe quadriceptal hypoplasia, absence of anterior knee folds, presence of dislocation, polymalformative syndrome and late treatment [3,6]. Treatment proposed for this malformation is, first of all, orthopaedic in newborns and infants through gentle manipulations to reduce the recurvatum and posture casts for 7 or 10 to 15 days, renewed several times for reducible forms (as for our patient). The evolution was good with normal knee mobility. Sometimes, due to retraction of the quadriceps responsible for difficult reduction, cast immobilization is preceded by skin traction for a few days [5,9]. The success rate of this orthopaedic method can reach 85%. The excellent evolution in our clinical case would be linked to the age of our patient, stage A of Leveuf and Pais and the absence of signs of poor prognosis. Reducibility would not be linked to the degree of genu recurvatum (stage) but to the associated anomalies [3]. The second therapeutic option is indicated for severe forms, and in the event of failure of orthopaedic treatment, it must be carried out for 3 to 6 months. You should always start with conservative treatment.

The techniques proposed are a V-Y lengthening quadricepsplasty (V-Y quadricepsplasty) or a percutaneous recession of the quadriceps, an anterior release under the patellar ligament or a transverse capsulotomy [5,9]. The main therapeutic complication of congenital genu recurvatum is genu valgum, which is related to trauma to the proximal physis of the tibia, induced

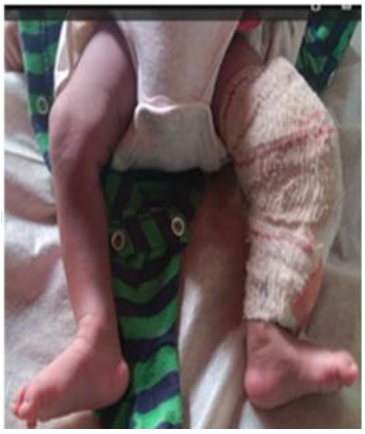

Figure 4: Anterior cast splint on knee flexed at 20°

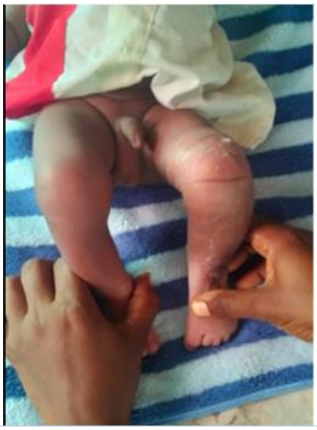

Figure 5: Passive knee flexion at 90°.

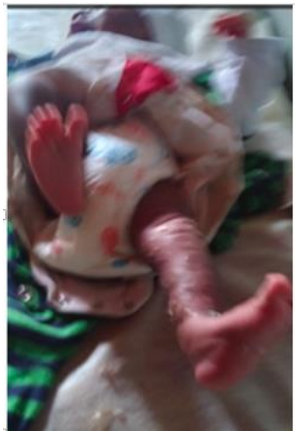

Figure 6: Symmetrical knee movements without knee hyperextension after orthopedic treatment.

Figure 7: Happy mother carrying her child on her back.

by forced manipulation of the knee, requiring reduction into an attempted saddle. This complication is more common in severe forms treated surgically [9]. Knee instability, scarring, and low quadriceps power are believed to be linked to the surgical release of quadriceps contracture [6]. Gen recurvatum can lead to lameness or prevent the child from standing and walking if left untreated. In our African regions, women carry their babies and babies on their backs during their rural or culinary activities. Our patient's mother was pleased to carry her child on her back (Figure 7). This attitude will strengthen the physiological position of the knee and correct a hip dislocation where social conditions are challenging. Monitoring was monthly, quarterly, semi-annual and annual. At one year, the orthopaedic examination showed symmetry of the lower limbs and normal flexion of both knees at 90°. The infant could stand with good muscle tone.

Conclusion

Congenital genu recurvatum is a rare pathology in pediatric orthopaedics. Its diagnosis is evident at birth. The simplicity of its treatment by a simple specialist contrasts with the anxiety of parents for the health of their child. Untreated or poorly treated Congenital Genu Recurvatum (CGR) can cause physical disability in the child and prevent them from being independent. The creation of mother-child centres, the training of pediatric surgeons, and their deployment in the country's different regions would facilitate good treatment of this benign condition.

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