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Naji Kareem Hassan
Ministry of Health, Baghdad
Medical Office, Al-Karkh, Al
Karkh General Hospital,
Baghdad, Iraq

Taleb Hassan Abbas
Ministry of Health, Baghdad
Medical Office, Al-Karkh, Al
Karkh General Hospital,
Baghdad, Iraq

Thamer Mahdi Saleh
Ministry of Health, Baghdad
Medical Office, Al-Karkh, Al
Karkh General Hospital,
Baghdad, Iraq

Corresponding Author:
Naji Kareem Hassan
Ministry of Health, Baghdad
Medical Office, Al-Karkh, Al
Karkh General Hospital,
Baghdad, Iraq

Congenital dislocation of the hip: Current concepts in advance for diagnosis and treatment

Naji Kareem Hassan, Taleb Hassan Abbas and Thamer Mahdi Saleh

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Abstract

Congenital hip dislocation is regularly updated, significant progress made over the last 30 years, particularly in field of clinical and ultrasound screening and early treatment. Searching for a consensus on the right way to realize it (who? how?) must be based on a prerequisite: good knowledge of anatomical, clinical, pathogenic definitions and concepts and therapeutic that underlie this vast subject. This is what this review of ideas proposes current (with historical lighting). The two authors, members of the French Society pediatric orthopedics (SOFOP) have particularly studied this subject and contributed to the national implementation of "good practices".

Keywords: Congenital dislocation of the hip, screening, sonography, treatment

Introduction

It is important to identify the main terms used in the vast field of congenital hip dislocation (LCH) to try to give a definition (we know that semantic precision is the mother of consensus). Often, from one team to another, the meaning varies: probably because that many terms cover notions still discussed, even controversial (some even provoked once polemics, which is no longer the case today!). We also find these nuances of appreciation as knowledge progresses in the anatomical, pathogenic, radiological domains. So will the terms be better defined in the light of progress observed and also questions that persist. We will avoid the pitfall of rewriting a story

"Classic" ^[1], by referring the reader to a more ancient ^[2] which retraced the main stages of this adventure, staked by some famous Europeans: English [Somerville ^[3], Barlow ^[4], Italians [Ortolani ^[5], Putti ^[6], Francais [The Damany ^[7], Petit *et al.* ^[8], Germans [Roser, Lorenz], etc.). In 1981, Seringe ^[9] in a teaching conference princeps sets out the anatomical and clinical bases that will make the bed of all future work (concept of dysplasia, notion of instability, etc...). In 1987, Kohler ^[10] brush an overview of the main therapeutic methods that to date, have not changed significantly. This same year, Teot and Deschamps ^[11] publish the first atlas hip ultrasound, a reference work that makes the point of the many techniques that have emerged little before. In 1994, the GEOP ^[12] summarizes the progress many, in a dedicated monograph congenital dislocation of the hip. Fenoll *et al.* ^[13] in 2006 make one last update in a book which lists in particular the epidemiological aspects, genetic resources and public health (in terms of screening). We will try below to define the main terms or concepts used by the pediatrician, the radiologist, the surgeon, three closely linked actors in the diagnosis and treatment of a condition that has not yet delivered all its secrets.

Anatomy

The study of the anatomical lesions of the dislocated hip is essential: it underlies the way to examine properly a child to clinically detect instability. In addition, the correlation of clinical examination data and these lesions led to the development of a theory consistent pathogenesis of this condition ^[14, 15]. Work began in 1820 [Paletta] and 1826 ^[16] but were especially important in the twentieth century [The Damany, Fairbank, Ortolani, Stanisavljevic, Watanabe, Ponseti]. Seringe and Kharrat ^[17] synthesized and describes in detail all these anomalies:

- The distended capsule forming a "luxation chamber" in which a posterior displacement or posterior superiority of the head (instability);
- The posterior superior acetabularn "Dysplasia") constituting a dislocation trough.

In the 1950s, hip arthrography experienced a great boom to study the limbus and the isthmus, at the base of the choice of an indication. Then, in the 1980s, ultrasound was used to introduce an examination vital dynamic and make a new reading of anatomy (notion of immaturity, dysplasia, modesty displacement). These various techniques have led to propose classifications, according to the importance of displacement and the possible existence of dysplasia; they do not do not always overlap and we propose below a summary

Congenital asymmetric basin

In a newborn or an infant, the asymmetrical pelvis Congenital Syndrome (BAC) combines a limitation of abduction of the hip with retraction of the adductors and on the other side a limitation of the adduction with retraction abductors (glutei muscles and tensor fascia lata). Originally described by Weissman in 1954^[18], then by Lloyd Roberts in 1978^[19], this pelvic obliquity was considered to be at the origin of a dysplasia with subluxation Progressive hip on the opposite side to the retraction abductors. The work of Seringe *et al.*^[9] showed that there was in the newborn two very different forms of LAC depending on whether the adducted hip was stable or not:

- Forms with instability that must be considered like unilateral dislocations or subluxations of hip;
- Forms without instability, which alone deserve the name of BAC, and who spontaneously heal without progressing to dysplasia or subluxation.

They can be considered as the consequence of a poor intrauterine posture that could not be "complete" until dislocation (see mechanical theory of CHL). BAC is sometimes associated with other clinical asymmetries: plagiocephaly, torticollis, scoliosis, which realizes at the maximum the great asymmetrical syndrome (molded baby syndrom of Lloyd Roberts). The discovery of a BAC at a newborn or infant is a criterion for "Hip at risk" not in the sense of evolution possible to a luxating dysplasia, but in recognition immediate event of this subluxation (by all clinical, ultrasound and radiographic means). X-rays of the pelvis in a child carrying a BAC are very difficult to interpret because of the asymmetry of the child who induces images of pseudo dysplasia, or even pseudo-luxation. True BAC does not usually require no treatment, but a simple surveillance because it is corrects spontaneously in a few months^[20].

Terminology concordance

Semantic precision is important because the terms, even in French, often have different meanings according to the authors. The difficulty increases again if one tries to correlate French terms with those of literature Anglo-Saxon. In particular, we now find articles with the title congenital dislocation of the hip - CDH or developmental displacement of the hip – DDH more difficult to translate. Are these different concepts A agreement on terminology is an essential prerequisite that justifies the clarification test below.

C.D.H.

This sequence of initials served as an abbreviation for the most used in the Anglo-Saxon literature before 1990: congenital dislocation of the hip. Correspondence in French

has always been congenital hip dislocation (CHL). However, some authors used the same acronym for CDH with different words for the letter D: Displacement for Somerville^[3], Dysplasia for Ortolani^[5] or Weinstein, Displacement or Dysplasia for Coleman^[11]. All this reflects some confusion that reflects a fuzzy and non-consensual conception of pathogenesis and pathology! Moreover, Catterall, in his editorial 1984 titled: What is congenital dislocation of hip^[12] referred to equivocal clinical signs as well as to term of dysplasia which lacked precision. He wished that we distinguish true dislocation from "subluxation" which for him, was anterosuperior so to consider as a specific entity.

D.D.H.

It was in 1989 that^[13] proposed to debut the congenital dislocation of the hi (CDH) and give it the term developmental displacement of the hip (DDH). This proposal was made because Klisic was convinced that congenital hip dislocation was not nor always congenital nor always a dislocation. He was thinking that she was a dynamic hip disorder that was able, with the development of the baby, to improve or to get worse. This new term developmental displacement embraces all varieties of the anomaly hip (luxation, subluxation and dysplasia). In his use which has become common for some fifteen years, the DDH stands for the same initials, but the second letter no longer corresponds to displacement but to dysplasia. We see that the terminology remains as confused. But one fact is certain: if the acronym DDH has taken over the acronym CDH is because of forensic problems in the United States because the lack of recognition of instability hip in the neonatal period had become the cause most common orthopedic action for liability medical against pediatricians. Anyway, the acronym DDH corresponds in French to "Luxurious Hip Disease" or "Luxurious Dysplasia of hip ", old terms that lack precision and especially imply that acetabula dysplasia would result in secondarily the displacement of the femoral head.

This pathogenetic conception seems to us to be wrong because everything shows that it is dislocation that is "dysplastic" and not the dysplasia that would be luxating

Screening

Consequence of ante-natal constitution of dislocation it is well screening for the condition at birth and not prevention. In the first half of the twentieth century, clinical screening was not well realized as the theory prevailed of the postnatal constitution of dislocation Ortolani, a pediatrician from Ferrara, was the first to campaigning for a systematic clinical examination, in the 1960s, in several European countries, including France followed by little effect, no more than that led by the Englishman T. Barlow at the same time, both the pathogenic certainties of the time were solid. To remedy this unfortunate situation, we have seen the recourse very broad, even systematic, radiography. In the 1980s, the national study conducted by the GEOP under the aegis of Seringe^[14] primacy to clinical examination (well conducted and facilitated by means of learning (manikin – films video)). This clinical screening could be completed by a additional radiographic examination, but only in certain situations qualified as "doubtful" or "risk ". The introduction of ultrasound in the early 1980s somewhat swept away these recommendations

because many wanted to see in this review the non-invasive panacea (and very sensitive) for a sure diagnosis, even... infallible! ^[18]. as a corollary, it was feared that "ultrasound screening "Replaces the clinical screening, which prevails still in some countries (Japan for example). The 1991 consensus conference clarified things ^[20]: currently, in France, ultrasound keeps its place in second intention and should not be systematic. A screening strategy is thus proposed ^[17] which leads to on a practical driving, where the therapeutic indications have been reduced (thanks to the monitoring role allowed by ultrasound).

Another important element of this screening is that it must be transcribed clearly and it is the role of the Health Book that to collect clinical findings and possibly ultrasound. In this respect, it can be deplored that the new version of the Health Book (2006) leaves a small fraction and poorly constructed neonatal hip examination.

Conclusion

In conclusion, let us recall the introduction of Work ^[12] which remains today fully relevant: "There is no more unambiguous treatment of CHL but treatments specific to each age group and at each anatomical situation... Treatment must not be trivialized. Despite the caution of the indications, despite the care and thoroughness of the realization, complications occur in a percentage of cases still too high but perhaps incompressible. Gravity of these complications, which jeopardize the future functional hip, justifies the need for a supported by specialist practitioners who know all the pitfalls of treatment and knowing the risks and traps of this pathology.

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