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RESEARCH ARTICLE

CASE REPORT: DEVELOPMENTAL DYSPLASIA OF THE HIPDISCOVERED IN AN ELDERLY PATIENT

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Abstract

Introduction:-

Hip dysplasia, or developmental dysplasia of the hip (DDH), is a common musculoskeletal condition where the hip joint fails to develop normally, leading to potential instability or dislocation. It encompasses a spectrum of disorders from mild acetabular dysplasia to complete hip dislocation. DDH is critical to address early, as untreated cases can lead to significant morbidity including chronic pain, osteoarthritis, and functional impairment in later life [2,3].

The condition is frequently identified in newborns through routine screening, particularly when risk factors such as breech presentation, family history, or limited prenatal ultrasound findings are present [1]. Despite early screening protocols, some cases may remain undiagnosed until later in childhood or adulthood, presentingaship pain, limited range of motion, or gait abnormalities [5].

Early intervention, which may include methods such as bracing, closed reduction, or surgical correction, is essential to optimize outcomes and prevent the progression of joint damage [4]. This case report illustrates a particular instance of hip dysplasia, detailing the patient's clinical presentation, diagnostic evaluations, and treatment strategy. Through this case, we aim to highlight the challenges in managing DDH and emphasize the importance of timely and effective treatment approaches.

Case report:

A 67-year-old woman was referred to the rheumatology clinic by her family physician with complaints of lower back pain persisting for two years. The pain is localized to her lower back and thighs, worsening when she lies on her back or sits for prolonged periods. She finds relief while walking but struggles with climbing stairs, praying, and turning in bed. She has no history of trauma. She is a mother of seven children, all delivered normally.Additionally, she has a history of hypertension and hyperlipidemia.

On examination:

Patient is fully cooperative, mobile with normal vital signs
Weight: 47 kg, Height: 147 cm, BMI: 20.7 kg/m
Cardiovascular, respiratory and abdominal examination were within normal
She has waddling gait with hyper lordosis of the back

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Hip joint examination

- Limited Hip flexors bilateral grade three
- Limited Hip abductors grade one
- Limited Left hip extensors grade two
- Limited Right hip extensors grade one
- Limited RT hip external rotation to 30 degrees
- Limited Left Hip external rotation to 45 degrees
- No hip joint flexion deformity
- Positive Trendelenburg test bilateral
- Negative Thomas test

Radiographic evaluation by X ray revealed (figure 1):

- ❖ Generalized reduction of bone density with thinned out corices as well as prominent medullar cancellous pattern indicating advanced osteoporosis and osteopenia.
- ❖ The right femoral head is totally dislocated and postero-superiorly displaced reaching the mid-point of the right iliac blade. It shows almost resolution of the femoral head and neck with residual sclerosis of the neck highly suggestive of avascular necrosis.
- ❖ The ipsilateral hip is significantly atrophic where the acetabulum is shallow and almost flattened.
- ❖ Normal radiographic appearance of the right Sacro-iliac joint.
- ❖ Marked narrowing of L5-S1 disc space with vacuum phenomenon and subarticular sclerosis.

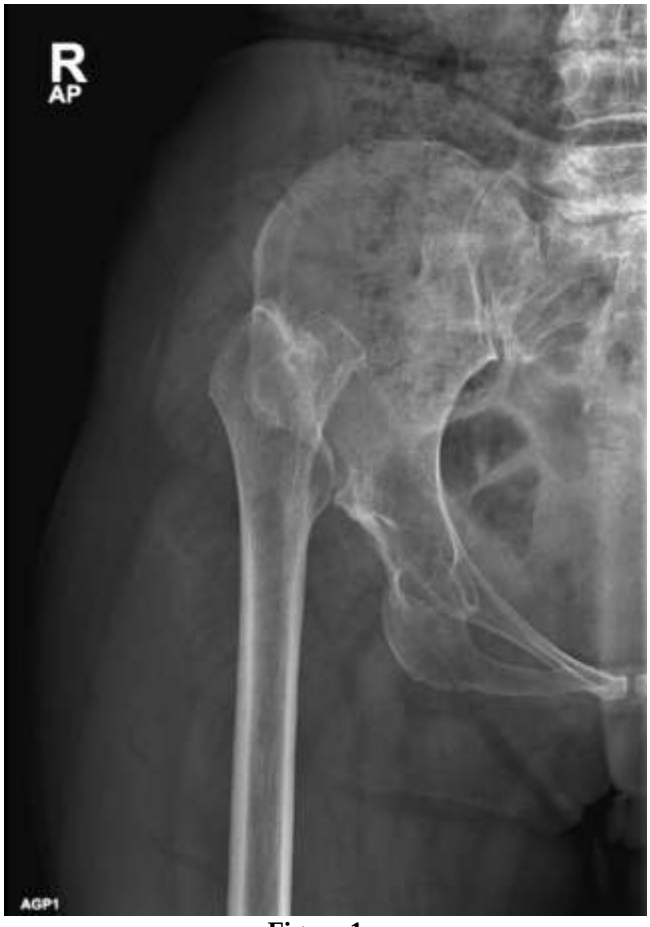


Figure 1:-

Bone Mineral Densitometry (BMD) test revealed osteoporosis.

Patient was treated conservatively by physiotherapy and treatment for osteoporosis. The patient was comfortable after treatment and her pain subsided.

Discussion:-

Hip dysplasia, or developmental dysplasia of the hip (DDH), represents a spectrum of hip joint abnormalities, ranging from minor acetabular dysplasia to complete dislocation. This case report illustrates a patient with DDH, highlighting the clinical features, diagnostic challenges, and management strategies for this condition.

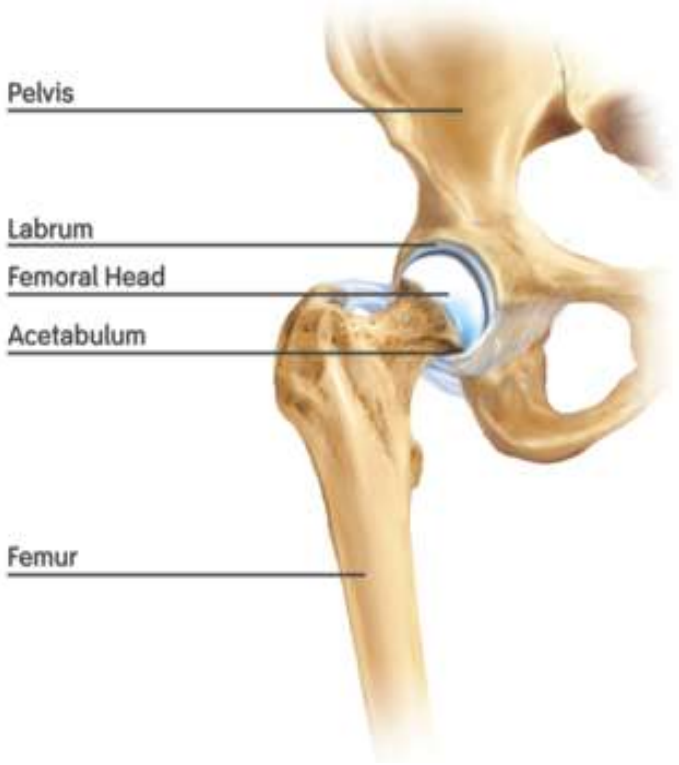
Clinical Features and Diagnostic Challenges:

The patient in this case presented with lower back pain and difficulty performing activities such as climbing stairs, turning in bed, and engaging in daily tasks. These symptoms, combined with the absence of a traumatic event, raise the suspicion of a musculoskeletal disorder like DDH. The clinical presentation in adults can be subtle and may mimic other conditions such as osteoarthritis or lumbar spine pathology [3]. This underscores the importance of considering DDH in the differential diagnosis, especially when patients present with unexplained hip or back pain.

Early detection of DDH is crucial but can be challenging, particularly in cases that present later in life. Traditionally, DDH is diagnosed in infants through physical examination and imaging studies. In older children and adults, the diagnosis may be more complex and often requires a combination of detailed history, physical examination, and advanced imaging techniques such as X-rays and MRI [1]. The patient's history, combined with physical examination findings, should guide appropriate imaging to confirm the diagnosis and assess the severity of the dysplasia.

Although chronic hip pain is often associated with aging, the appearance of this symptom in adolescents and young adults may be a sign of hip dysplasia, a condition in which one or more areas of the hip joint have not developed normally [11].

In the healthy hip joint, the upper end of the femur (thighbone) meets the acetabulum to fit together like a ball and socket/cup, in which the ball rotates freely in the hip socket. Articular cartilage, a smooth protective tissue, lines the bones and limits friction between the bone surfaces during movement. Another piece of soft tissue called the labrum – which is made of fibrous cartilage – lines the hip socket, cushions the joint, and helps hold the “ball” – (the femoral head) in place [6].



Anatomy of a Normal Hip

In individuals with hip dysplasia, the acetabulum does not develop fully, making it too shallow to adequately contain and support the femoral head. When this abnormality is present, the ball and socket are misaligned, and the labrum can end up bearing the forces that should be distributed throughout the hip. Also, more force is placed on a smaller surface of the hip cartilage and bone, resulting in arthritis over a number of years [11].

Injury to the labrum and the ligaments that help hold the joint in place can add to the pain and wear and tear on the cartilage. The severity of hip dysplasia can vary considerably from instances in which there is a minor malalignment to a complete dislocation of the femoral head and acetabulum [9].

Figures from 1 to 4 are retrieved from our hospital records.

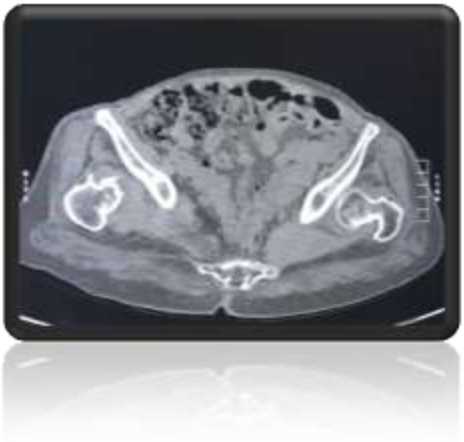
Fig.1:-

	- Plain X ray of the left hip joint reveals upwards dislocation of the left femoral head and shallow left acetabular fossa, deficient acetabular roof.

Fig.2:-

	- Plain X ray of the right hip joint showing complete resorption of the right femoral head pointing to old avascular necrosis episode, upwards dislocation of the right femoral bone, hypoplastic shallow right acetabular fossa showing deficient right acetabular roof.

Fig.3:-



- Selected Axial cut of Multislice non contrast CT scan of the pelvis (bone Window) showing bilateral upwards posterior femoral dislocation with pseudoarthrosis of the left hypoplastic left femoral head with the left iliac bone, complete resorption of the right femoral head showing femoral neck irregularities pointing to long standing avascular necrosis

Fig.4:-

- Selected reconstructed coronal cut of Multislice non contrast CT scan of the pelvis (boneWindow)showing bilateral cranial femoral dislocation with pseudoarthrosis of the left hypoplastic left femoral head with the left iliac bone ,complete resorption of the right femoral head showing femoral neck irregularities pointing to long standing avascular necrosis.

Radiographic features

Ultrasound is the modality of choice prior to ossification of the proximal femoral epiphysis. Once there is a significant ossification then x-ray examination is required. For some reason, the left hip is said to be more frequently affected [6]. One-third of cases is affected bilaterally [7].

Ultrasound

Ultrasound is the test of choice in the infant (<6 months) as the proximal femoral epiphysis has not yet significantly ossified. Additionally, it has the advantage of being a real-time dynamic examination allowing the stability of the hip to be assessed with stress views. Some values are used to 'objectively' assess morphology [10].

Plain radiograph

The key to plain film assessment is looking for symmetry and defining the relationship of the proximal femur to the developing pelvis. The ossification of the superior femoral epiphyses should be symmetric. Delay of ossification is a sign of DDH [6,11].

The cause of abnormal development of the acetabulum is not yet well understood, although there appears to be a relationship between the position of the fetus in the womb, breech births, and a family history of dysplasia. Screening for hip dysplasia (also called pediatric hip dysplasia or developmental hip dysplasia) is routine care for newborns in the United States, but it is impossible to detect all cases of eventual dysplasia in the newborn period. Some of these abnormalities are relatively mild and may not be detected early or cause symptoms until the individual reaches adolescence or later [8].

A significant number of hip replacements are believed to be the result of untreated hip dysplasia – up to 26%, according to data gathered in the Norwegian Arthroplasty Register over a 10-year period. Some experts believe this figure to be higher [6].

Although hip dysplasia occurs most frequently on the left side of the body, either one or both hips may be affected. It has recently been shown that the deformity is bilateral (occurring on both sides) in 40% of patients, with varying severity on either side. Hip dysplasia is more common in women than in men, a phenomenon that may be due to anatomical differences in the female pelvis and the tendency for women to have greater laxity (looseness) in their ligaments [8].

In addition to a thorough physical exam and patient history, orthopedists use X-rays, magnetic resonance imaging (MRI), and in some cases, 3D CT images to confirm a diagnosis of hip dysplasia. The highly sophisticated MRI techniques available at HSS are particularly helpful in providing images that show clear distinction between bone and cartilage and helps to pinpoint the extent of the labral tear if present [11].

Management and Treatment Strategies:
The management of DDH depends on the age at diagnosis and the severity of the condition. For infants, non-surgical treatments such as Pavlik harnessing are effective in managing mild to moderate dysplasia [4]. However, in older children and adults, where the condition may be more advanced, non-surgical methods might be insufficient. In these cases, treatment options may include physical therapy, pain management, or surgical intervention to correct hip alignment and stabilize the joint.

Treatment for hip dysplasia focuses on preserving the hip for as long as possible, which is one reason to be evaluated for hip pain promptly. The sooner the orthopedist detects the problem, the more treatment options are available. An initial trial of non-surgical treatment may be appropriate for young adults with either very mild dysplasia or those whose hip dysplasia has resulted in significant damage to the joint and whose only surgical treatment option would be hip replacement [7].

In this case, given the patient's age and symptoms, a multidisciplinary approach is essential. This might include orthopedic consultation for potential surgical options if conservative measures are inadequate. Surgical interventions may involve hip arthroscopy, osteotomy, or total hip replacement, depending on the degree of dysplasia and the patient's functional needs [5].

Long-Term Outcomes and Follow-Up:
The long-term outcomes for DDH largely depend on the timeliness and appropriateness of the intervention. Early and effective treatment can significantly improve functional outcomes and reduce the risk of long-term complications such as hip osteoarthritis and chronic pain [2]. Regular follow-up is critical to monitor the patient's progress, assess the effectiveness of the treatment, and make necessary adjustments to the management plan.

In this case, a comprehensive follow-up strategy was done including regular physical assessments and imaging to ensure that the hip joint remains stable and functional. Collaboration among rheumatologists, orthopedic surgeons, and physical therapists will help provide holistic care and optimize treatment outcomes.

Conclusion:-

Hip dysplasia is a complex condition that requires a careful and thorough approach to diagnosis and management. This case highlights the importance of considering DDH in patients presenting with unexplained musculoskeletal symptoms and emphasizes the need for early intervention to improve outcomes. By reviewing this case, we contribute to the broader understanding of DDH and underscore the value of a multidisciplinary approach in managing this challenging condition.

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