International Journal of Research in Medical Sciences
Tholu CP et al. Int J Res Med Sci. 2024 Jul;12(7):2664-2667
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20241932

Case Report

Unveiling the elusive: a case of missed hydrops fetalis

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Received: 16 May 2024
Revised: 12 June 2024
Accepted: 18 June 2024

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ABSTRACT

Hydrops fetalis, characterized by abnormal fluid accumulation in fetal tissues, poses diagnostic challenges often leading to adverse outcomes. We present a case of a 26-year-old multigravida diagnosed with hydrops fetalis at 26 weeks, despite unremarkable antenatal visits. Detailed ultrasound revealed characteristic signs, prompting urgent intervention. Despite aggressive measures, the neonate succumbed shortly after birth. This case highlights the complexities of diagnosing and managing hydrops fetalis, emphasizing the need for heightened clinical awareness. Diagnostic steps, including fetal ultrasound and genetic testing, are pivotal for confirming diagnosis and guiding management, underlining the critical role of comprehensive prenatal care in improving outcomes.

Keywords: Hydrops fetalis, Fetal ultrasound, Diagnostic challenges, Prenatal care, Multidisciplinary management, Neonatal outcomes

INTRODUCTION

Hydrops fetalis, an uncommon yet profoundly distressing condition, manifests as an abnormal accumulation of fluid within fetal tissues and body cavities. While both immune and non-immune factors contribute to its etiology, non-immune causes have become increasingly prevalent, often carrying a grim prognosis.[1] The imperative of early detection and timely intervention cannot be overstated, yet the diagnosis of hydrops fetalis presents formidable challenges, especially when routine prenatal screenings yield unremarkable results. Through the presentation of a compelling case, we aim to illuminate the intricate diagnostic landscape surrounding hydrops fetalis, shedding light on the potential consequences of missed diagnoses and emphasizing the critical importance of heightened clinical awareness.

The spectrum of etiological factors contributing to hydrops fetalis encompasses both immune-mediated and non-immune phenomena. Historically, immune causes, notably Rh isoimmunization, dominated the landscape of hydrops fetalis. However, the widespread adoption of anti-D immunoglobulin prophylaxis has markedly attenuated the prevalence of immune-related cases, shifting the focus toward non-immune etiologies. These encompass a diverse array of conditions, including structural fetal anomalies, chromosomal aberrations, congenital infections, and maternal disorders, each presenting unique challenges in diagnosis and management.[2]

Prompt recognition of hydrops fetalis is paramount for optimizing outcomes, yet its diagnosis poses considerable complexities. Clinical manifestations may vary widely, ranging from subtle signs to overt symptoms such as fetal ascites, pleural effusions, or pericardial effusions. Moreover, the absence of maternal symptoms or identifiable risk factors can obscure suspicion, leading to delays in diagnostic evaluation and intervention.[3]

In this context, the case presented herein serves as a poignant illustration of the diagnostic pitfalls inherent in the assessment of hydrops fetalis. Despite the patient's compliance with routine antenatal care, the absence of overt clinical signs during initial evaluations masked the underlying pathology, underscoring the elusive nature of this condition. Only upon further scrutiny at a later gestational age did the characteristic features of hydrops fetalis emerge, precipitating urgent action.

Through the elucidation of this case, we endeavor to raise awareness among healthcare providers regarding the diagnostic challenges inherent in hydrops fetalis and underscore the imperative of vigilance in its recognition. By sharing insights gleaned from this experience, we aspire to foster a deeper understanding of this complex condition and ultimately enhance the care and outcomes of affected pregnancies.

CASE REPORT

A 26-year-old multigravida, with an otherwise uneventful obstetric history, presented at 6 months of gestation with complaints of abdominal pain radiating to the back and thighs. Despite her diligence in attending three antenatal visits at another healthcare center, each seemingly unremarkable, the subsequent evaluation at 26 weeks revealed concerning findings indicative of hydrops fetalis. Recognizing the gravity of the situation, the patient was promptly referred to a tertiary care health center for further management.

Table 1: Diagnostic approaches and implications for patient management in hydrops fetalis.

Diagnostic Step	Rationale	Implications for patient management
Detailed fetal ultrasound and imaging studies	To identify characteristic features of hydrops fetalis (e.g., fetal ascites, pleural effusions, pericardial effusions)	Confirmation of diagnosis, assessment of fetal well-being, and determination of severity
Genetic testing (if indicated)	To identify chromosomal anomalies or genetic mutations associated with hydrops fetalis	Establish underlying etiology, provide prognostic information, and guide family counseling and decision-making
Maternal serological testing	To screen for maternal infections (e.g., parvovirus B19, cytomegalovirus) or other maternal conditions associated with hydrops fetalis	Identification of potential treatable causes, such as maternal infections, which may require specific antiviral or supportive therapy during pregnancy
Fetal echocardiography	To assess fetal cardiac function and detect structural abnormalities	Identification of congenital heart defects contributing to hydrops fetalis and determination of suitability for fetal cardiac interventions or planning for neonatal cardiac care
Amniocentesis or cordocentesis (if indicated)	To obtain fetal blood or amniotic fluid for further analysis, including fetal hematological parameters, infection screening, and genetic testing	Further characterization of the fetal condition, identification of specific etiologies, and guidance for prenatal interventions, such as intrauterine transfusions for fetal anemia
Fetal magnetic Resonance imaging (MRI) (if available)	To provide detailed imaging of fetal anatomy and pathology, complementing ultrasound findings	Augmentation of diagnostic capabilities, particularly in cases with complex fetal anomalies or when ultrasound findings are inconclusive

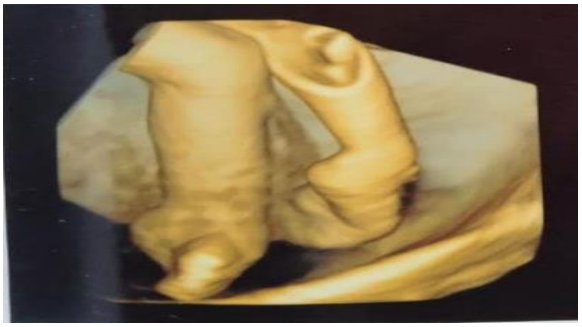

Figure 1: 3 D ultrasound image showing bilateral club feet.

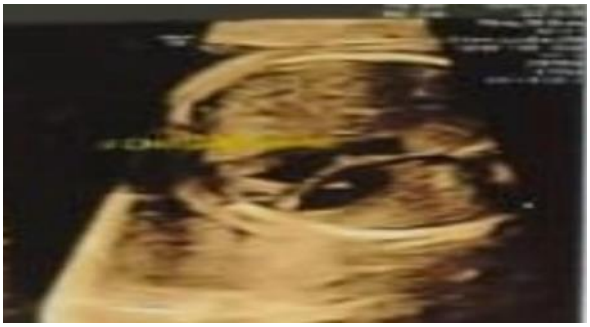

Figure 2: Four-chamber view of the heart showing a single echogenic intracardiac focus on left ventricle.

The diagnostic workup at the tertiary care facility unveiled telltale signs of hydrops fetalis, including bilateral clubfoot (Figure 1), a solitary echogenic focus in the left ventricle (Figure 2), and evidence of polyhydramnios on imaging studies. These findings, initially elusive during routine antenatal examinations, prompted urgent intervention to assess fetal well-being and formulate a management strategy.

Given the severity of the fetal condition, delivery was expedited. However, despite the best efforts of the healthcare team, the neonate emerged into the world with profound anasarca and bradycardia, necessitating immediate resuscitative measures. Despite aggressive interventions, including advanced life support measures, the infant's clinical course was relentlessly grim, culminating in a tragic outcome with the neonate succumbing shortly after birth.

The decision to forego post-mortem examination was made by the family, further complicating efforts to ascertain the precise underlying cause of hydrops fetalis in this case. Consequently, crucial questions regarding the etiology and contributing factors remain unanswered, underscoring the inherent challenges in elucidating the complexities of this condition.

This case highlights the importance of comprehensive evaluation and timely referral in pregnancies with suspected complications, such as hydrops fetalis. Despite the initial lack of significant findings during routine antenatal care, the prompt recognition and subsequent management at a tertiary care center were pivotal in addressing the fetal condition, albeit with tragic outcomes in this instance. Through the dissemination of this case, we aim to underscore the critical role of collaborative and multidisciplinary care in optimizing outcomes for pregnancies complicated by hydrops fetalis.

DISCUSSION

The case presented highlights the diagnostic complexities and management challenges associated with hydrops fetalis. Despite advancements in prenatal care and diagnostic modalities, timely identification of hydrops fetalis remains elusive in some cases, leading to significant morbidity and mortality.

Hydrops fetalis is defined by the presence of at least two abnormal fluid collections in the fetus, including ascites, pericardial effusion, pleural effusion, and generalized skin edema, often accompanied by placental thickening and polyhydramnios.4 However, non-immune hydrops fetalis is relatively uncommon, with an estimated prevalence of approximately 2-3 cases per 10,000 live births. Despite its rarity, hydrops fetalis carries a high perinatal mortality rate ranging from 50-98%, underscoring the importance of early diagnosis and intervention.[5]

The presented case illustrates the diagnostic challenges inherent in identifying hydrops fetalis, particularly when clinical manifestations are subtle or nonspecific. Despite the patient's compliance with routine antenatal care, the diagnosis was delayed until advanced gestational age, emphasizing the need for heightened clinical suspicion and comprehensive evaluation in pregnancies with suspected complications.

Ultrasound remains the gold standard for diagnosing hydrops fetalis, with characteristic features including generalized edema and fluid accumulation in serous cavities.[6,7] Table 1 shows the diagnostic approaches and implications for patient management in hydrops fetalis However, as demonstrated in the presented case, certain anomalies may not be readily apparent during routine antenatal examinations, necessitating a thorough evaluation by experienced sonographers.

The etiology of hydrops fetalis is diverse, encompassing both genetic and structural abnormalities, congenital infections, and maternal disorders. Recent studies have highlighted the role of advanced imaging modalities, such as fetal MRI, in augmenting diagnostic capabilities and guiding prenatal interventions.[7] Additionally, advancements in genetic testing techniques have enabled the identification of underlying chromosomal abnormalities and genetic mutations associated with hydrops fetalis, offering valuable prognostic information and guiding management decisions.

Prognosis in hydrops fetalis varies depending on the underlying etiology, with certain factors such as early gestational age, fetal chromosomal anomalies, and structural defects portending a poorer prognosis. While aggressive resuscitative measures may be employed, the presented case underscores the grim reality of hydrops fetalis, with the neonate succumbing shortly after birth despite intervention.[8,9]

Postmortem evaluation is essential in all cases of hydrops fetalis resulting in neonatal death, offering insights into the underlying etiology and informing future management strategies. Studies have shown that the prognosis of non-immune hydrops fetalis depends on the underlying etiology, genetic abnormalities, and associated structural defects, with certain anomalies such as Bart's hydrops and chromosomal abnormalities resulting in poor outcomes.[10,11]

CONCLUSION

In navigating the complexities of hydrops fetalis, this case illuminates the critical need for heightened clinical awareness and comprehensive prenatal evaluation. By emphasizing the importance of early recognition and multidisciplinary intervention, we strive to enhance the care and outcomes of pregnancies impacted by this challenging condition.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Bellini C, Donarini G, Paladini D, Calevo MG, Bellini T, Ramenghi LA, et al. Etiology of non-immune hydrops fetalis: An update. Am J Med Genet A. 2015;167A(5):1082-8.
2. Meng D, Li Q, Hu X, Wang L, Tan S, Su J, et al. Etiology and Outcome of non-immune Hydrops Fetalis in Southern China: report of 1004 cases. Sci Rep. 2019;9(1):10726.
3. Swearingen C, Colvin ZA, Leuthner SR. Nonimmune Hydrops Fetalis. Clin Perinatol. 2020;47(1):105-21.
4. Fatušic Z. Nonimmune hydrops fetalis. Donald School Journal of Ultrasound in Obstetrics and Gynecology. 2007;1(1):105-10.
5. Vanaparthy R, Mahdy H. Hydrops Fetalis. [Updated 2022 Sep 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available at: https://www.ncbi.nlm.nih.gov/books/NBK563214/. Accessed on 20 February 2024
6. Brock WW, Bradshaw WT. Congenital Chylothorax: A Unique Presentation of Nonimmune Hydrops Fetalis in a Preterm Infant. Adv Neonatal Care. 2016;16(2):114-23.
7. Jauniaux E. Diagnosis and management of early non-immune hydrops fetalis. Prenat Diagn. 1997;17(13):1261-8.
8. Sekar R. Hydrops fetalis. InComplications of Pregnancy 2019 Jun 12. London, UK: IntechOpen; 2019.
9. Jones DC. Nonimmune fetal hydrops: diagnosis and obstetrical management. Semin Perinatol. 1995;19(6):447-61.
10. Younge T, Ottolini KM, Al-Kouatly HB, Berger SI. Hydrops fetalis: Incidence, Etiologies, Management Strategies, and Outcomes. Research and Reports in Neonatology. 2023;13:81-92
11. Mastromoro G, Guadagnolo D, Khaleghi Hashemian N, Marchionni E, Traversa A, Pizzuti A. Molecular Approaches in Fetal Malformations, Dynamic Anomalies and Soft Markers: Diagnostic Rates and Challenges-Systematic Review of the Literature and Meta-Analysis. Diagnostics (Basel). 2022;12(3):575.

Cite this article as: Tholu CP, Ahmed IW, Dange S, Choudhary AB, Kamath A, Yadav A. Unveiling the elusive: a case of missed hydrops fetalis. Int J Res Med Sci 2024;12:2664-7.