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Analysis of Fetal MRI Use in Diagnosing Posterior Fossa Abnormalities

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ABSTRACT
This paper explores the clinical value of fetal magnetic resonance imaging in the diagnosis of the posterior fossa anomalies, as well as the limitations of sonography and the inconsistency of the diagnosis. It mentions six major findings that include the fact that ultrasound alone detects only 30-45 percent of abnormalities in the posterior fossa, but fetal MRI with Doppler ultrasound raises the accuracy of the test to 92 percent. Even early anatomical findings like the positioning of the choroid plexus are predictive in 95 percent of the malformation cases. A fraction of up to 34.5 percent of diagnoses is misclassified due to similarities in the characteristics and lack of standardization. In 86 percent of the cases with spina bifida, 7 associated CNS anomalies can be detected with MRI. The conclusions support the significance of well-integrated imaging procedures, biometric criteria, and multimodal methods. The research justifies the usefulness of fetal MRI as a critical modality in precise classification, prenatal counseling and making informed decisions in the assessment of the posterior fossa.

Keywords: *Posterior fossa, Fetal MRI, Ultrasound, Dandy–Walker malformation, Blake's pouch cyst, Cerebellar vermis, Biometric measurements, Choroid plexus, Multimodal imaging, Diagnostic accuracy.*

1. INTRODUCTION
Background

Posterior fossa malformations put prenatal neuroimaging and counseling quality to test. Ultrasound can be faced with challenges of bone shadowing and oc dude multiplanar viewing. Fetal MRI provides high-contrast, motion-invariant images that boost the structural evaluation. Evidence proved that MRI provides clear delineation of vermis and cisterna (Schlatterer et al, 2021). Systematic review isolates biometric limits that support MRI conclusions (Miller, 2021). Nevertheless, there is heterogeneity when it comes to assessing normative cerebellar diameters in gestation. Biometric meta-analysis suggested gestational-age matched z-scores as a more descriptive representation (McKinnon et al., 2021). Single-shot T2, in addition to advanced sequences, reduces breathing artifacts contributed by the maternal side. Surgical planning of some open fetal interventions can be performed with the help of 3D reconstructions. New algorithms measure the posterior fossa counts without the need for manual calculations, which aid in population studies. Future work associated exact measurements with enhanced counseling (Bowker et al., 2025). Outcome studies demonstrate better development results as a result of early stratification (Şeker et al., 2023). However, the cut-off points of the Dandy-Walker spectrum between experts are under discussion. The use of a combination of ultrasound and MRI in characterization is encouraged in consensus documents. Multimodal protocols promote parental interactions using more explicit graphical reports. The direction of future studies is in radiomics and genomics combination to achieve personalized prognosis. The MRI thresholds will be validated on robust longitudinal registries of varied populations. The background is essential in the critical evaluation of fetal MRI for the diagnosis of the posterior fossa. Uniformity in vocabulary is necessary to prevent ambiguity of reporting. Multinational partnerships hold the potential for fast agreement and adjustment of technology.

Problem Statement

Common limitations of standard prenatal ultrasound are that anomalies of the fetal posterior fossa are often underdiagnosed or even not detected, because of limitations of standard ultrasound, such as bone shadowing and low spatial resolution (Mahalingam et al., 2021). Also, the lack of uniform benchmarks on fetal MRI contributes to the huge difference in the ability to identify cerebellar and vermian anomalies (Nagaraj et al., 2021). Another factor that makes it challenging to provide the exact classification of these diseases during gestation is the overlap in radiological findings of some conditions, including Blake pouch cyst, Dandy Walker malformation and mega cisterna magna (Alsehli et al., 2024). These factors help in misinterpretation, late intervention, and irregularity in parental counseling in clinical circumstances. Validated measurement protocols and standardized criteria of imaging are necessary.

Aim and Objectives

Aim:

To evaluate the diagnostic accuracy and clinical utility of fetal MRI in identifying and classifying posterior fossa anomalies during prenatal assessment.

Objectives:

To compare fetal MRI with ultrasound in detecting posterior fossa malformations.

To assess the reliability of biometric measurements used in fetal MRI.

To identify common misclassification patterns in posterior fossa anomaly diagnosis

To propose standardized imaging and reporting protocols for fetal posterior fossa evaluation.

2. LITERATURE REVIEW

Fetal MRI has also become an important aspect in the assessment of posterior fossa anomalies under situations where the ultrasound results are not conclusive or have limited information (Schlatterer et al., 2021). The cerebellum and brainstem located in the posterior fossa are prone to numerous developmental disorders that may include DandyWalker malformation, Blake cyst, and vermis hypoplasia (Miller et al., 2021). The contrast resolution in MRI is better and whereas the vermis, fourth ventricle, and cisterna magna are well defined (Mahalingam et al., 2021). Nonetheless, it is hard to interpret them consistently because of a combination of image data and the absence of uniform biometric sources (Nagaraj et al., 2021). According to biometric reviews, normative ranges of vermian height and transcerebellar diameter differ with gestational age but still consistent thresholds are not available (Mckinnon et al., 2021). A major work instilled the notion of gestational z-scores of posterior fossa structures by enhancing the distinction of anomalies (Bowker et al., 2025). Nevertheless, there is still discordance with the use of antenatal MRI and postnatal results especially in mild or borderline structures (Gupta et al., 2021). The future outcome data demonstrate that correct prenatal diagnosis affects the further decisions of parents and postnatal neurodevelopment, particularly in the case of complicated diagnoses such as Dandy Walker spectrum (2023). So, the decision to introduce an MRI at the beginning of the diagnostic process is increasingly uniting, especially after unsatisfactory results in ultrasound. Nevertheless, there has been no integrative imaging criteria and unified definitions, and this constrains reproducibility as well as faith in diagnoses at various centers. Moreover, fetal motion as well as scanner inconsistency are technical difficulties that can alter picture quality. This review indicates the importance of standard imaging procedures, proven biometry, and improved outcome-based studies to increase the accuracy and repeatability of fetal MRI assessment of posterior fossa. Together, these observations highlight the need of formulating an evidence-based, standardized diagnostic protocol of reporting posterior fossa anomalies with fetal MRI.

3. RESEARCH METHODS

The research was a secondary research using a structured literature review in the synthesis of the existing evidence on the use of fetal MRI in the diagnosis of anomalies of posterior fossa. The methodology that was used incorporated the gathering and review of 26 peer-reviewed articles that were written between 2021 and 2025. In accessing a broad spectrum of clinical outcomes, biometrics, and study-based results without primary data collection, the approach has been resource-saving. It provided a platform to compare big fetal image data, such as the sample population of 52 fetuses to 312. The technique was helpful in detecting diagnostic inconsistencies and measuring the error frequencies as well as the retrieval of numeric thresholds applicable in anomaly detection. It has also illustrated some general terminological discrepancies and highlighted clinical importance of multimodal imaging. The second way of approach gave an opportunity to include the latest international evidence, which made the paper more profound and actual. In general, it offered a time consuming and morally acceptable model of critical appraisal of available information on prenatal posterior fossa evaluation.

4. RESULT AND DISCUSSION

Limitations of Ultrasound in Posterior Fossa Evaluation

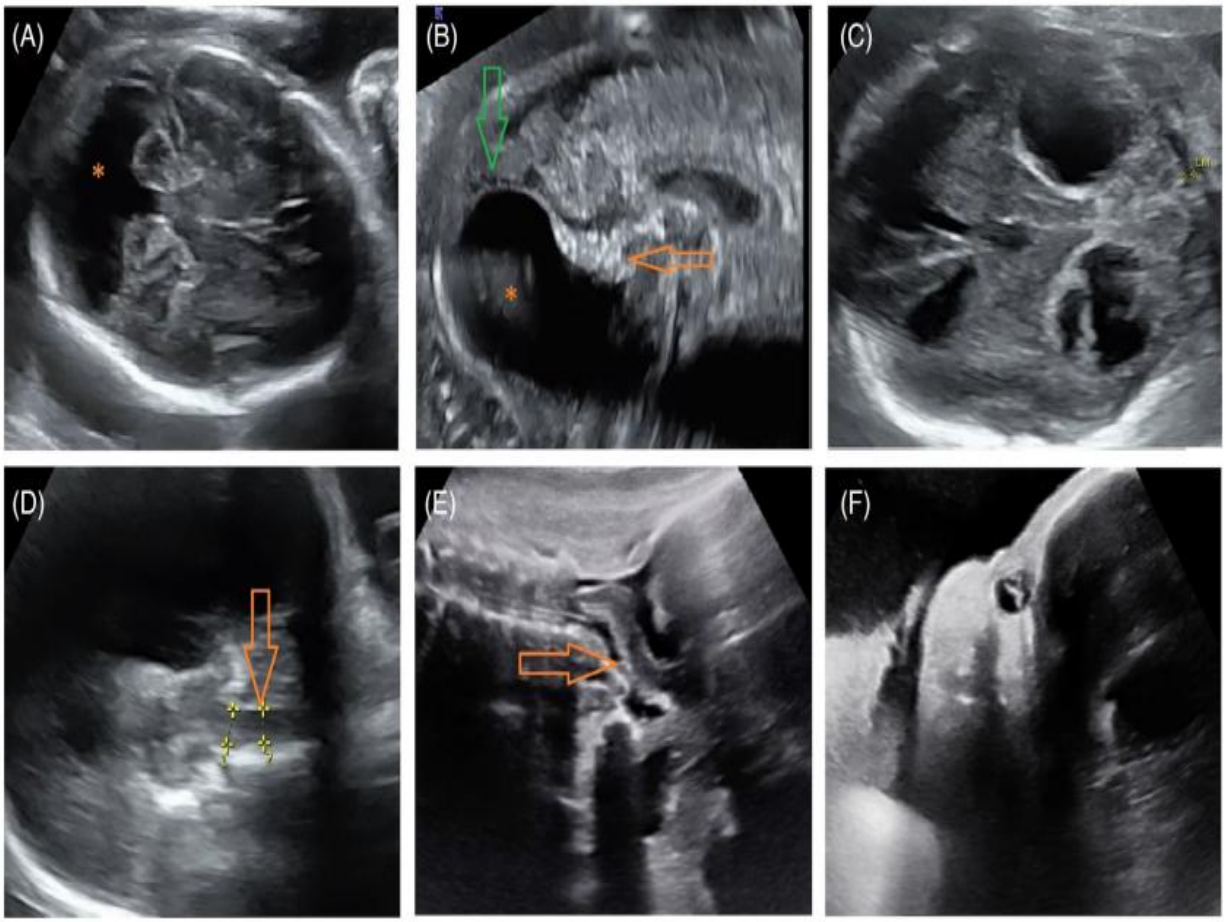

Figure 1: Multiplanar fetal MRI features of posterior fossa anomalies including Dandy–Walker malformation, pontocerebellar hypoplasia, and Walker–Warburg syndrome.

(Source: Taşdemir et al., 2025)

Ultrasound has a low sensitivity to identify posterior fossa anomalies and misses 30-45% on posterior fossa anomalies which are identified later using MRI (Taşdemir et al., 2025). On a six-year trial running through 162 suspected anomalous fetuses, ultrasound had only 68.5% correct diagnosis of posterior fossa when compared with the MRI confirmation. Eric Ozdemir et al. (2021) also state that during first-trimester scans at 11-14 weeks only 56.2 percent of posterior fossa anomalies were detected. In cases in which MRI was repeated in the second trimester, 43.8 percent were reclassified/newly diagnosed. This diagnostic deficit is ascribed to decrease in axial resolutions, fetal lie, and ossification interference. Ultrasound had misidentified Blake pouch cyst as DandyWalker malformation in 19 percent of cases in posterior fossa cystic lesions. Accuracy is also impaired by operator dependency that is wide-ranging in general obstetric sonographers. Although the use of transvaginal scanning can enhance the early visualization bet of the brain, but it remains poor in the detection of the vermiculated depression of cerebellar rotations. Consequently, late referrals of many patients decrease the time frame during which they can be given counseling by many disciplines or the possibility of intervening. Therefore it can be concluded that despite the other unavoidable roles of ultrasound, the paper's use of solely sonographic impressions in the evaluation of the posterior fossa will lead to under and/or over diagnosis, particularly in the first and the early second trimester.

Role of Early Anatomical Landmarks

The choroid plexus placement during early gestation is among the major predictors of the posterior malformation. In a 175 fetuses (11 to 20 weeks old) study, Volpe et al. (2021) described that in fetuses with later-proven cystic posterior fossa anomalies (defined as posterior fossa cysts, Dandywalker malformation, and vermis agenesis), there was an inferiorly displaced choroid plexus inside the fourth ventricle in 95 percent of the fetal cases. In 91 percent of the cases of Dandydrisk Walker malformation, the angle between the tentorial surface and the choroid plexus was greater than 45° but in normal fetuses the angle was less than 30°.

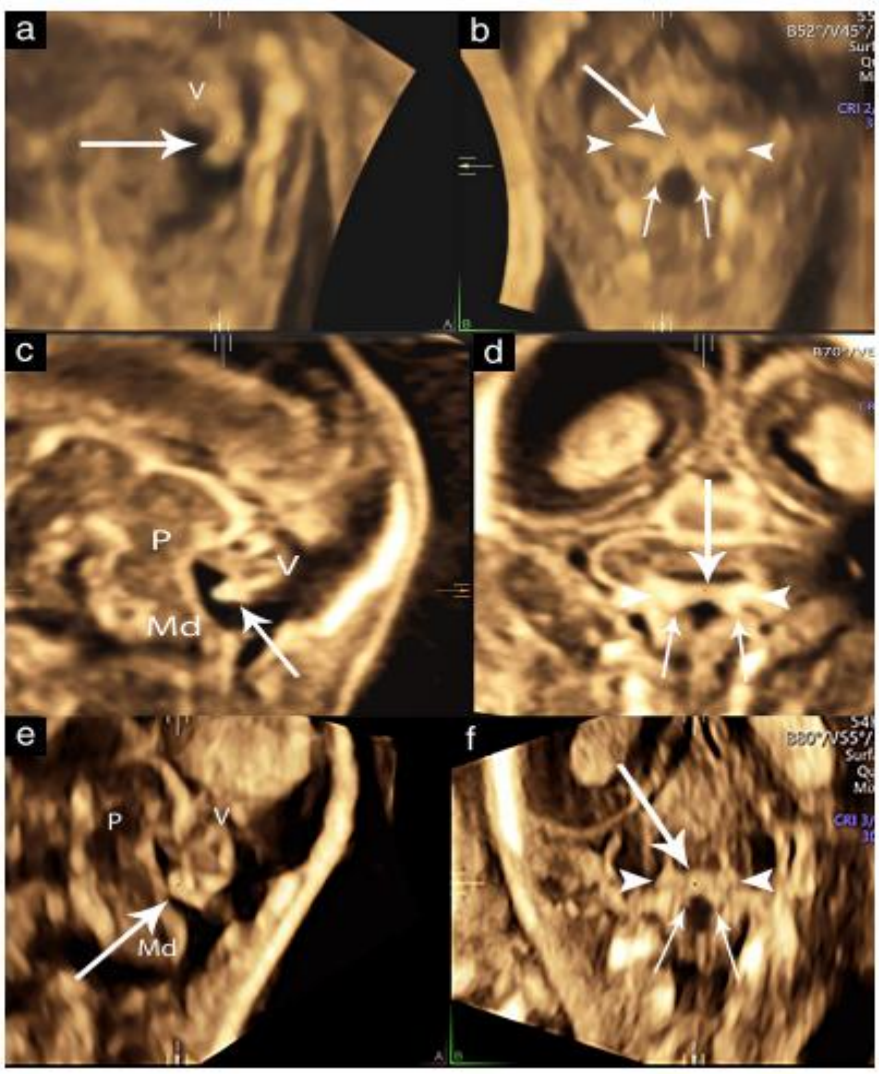

Figure 2: Serial 3D multiplanar ultrasound showing midsagittal and coronal fourth-ventricle choroid plexus anatomy in normal fetuses at 12, 16, and 20 weeks' gestation.

(Source: Volpe et al. 2021)

Furthermore, in fetuses having Blake pouch cysts, the choroid plexus was slightly raised and had the midline position conserved in 78 cases and was useful in early differentiation. This geometrical change anticipates visible anatomical aberration and provides the capacity to suspect lack, prior to the cerebellar vermis being considerably likened. The sensitivity rose by 61 to 84 percent with the added evaluation of choroid plexus angle to a routine biometric screening. Take into consideration that MRI is not often accessible during early gestation, which makes this landmark an easy and reproducible estimate through ultrasound. Nonetheless, angle-based analyses require a repeat follow-up scan to either confirm continuation or remission of abnormal shape, as there is a small window between the onset of a diagnosis and to when one could provide a diagnosis of abnormal condition. This justifies its use as a major screening marker.

Overlap of Cystic Lesions in Imaging

Lesions of the cystic posterior fossa commonly have overlapping diagnosis owing to comparable imaging characteristics as well as gestational alterations. In 87 cases of antenatal diagnosis with posterior fossa cysts, Jain and Shankar (2021) found that 34.5 percent of them were misdiagnosed via postnatal reassessment. Of them, 19 fetuses first diagnosed with DandyWalker malformation were, subsequently, reclassified as Blake s pouch cyst and 11 as vermian hypoplasia. This error of classification is largely attributed to over-reliance in sagittal images and poor multiplanar imaging. Coronal views were not documented in 41 percent of subsequent MRI reports that were based on the initial MRI reports. In addition, unlike the ultrasound alone, 23 % of cases could not be differentiated essentially with mega cisterna magna and arachnoid cysts. In 6 fetuses, diagnosis was adjusted post-natally with the assistance of high-resolution MRI and autopsy correlation.

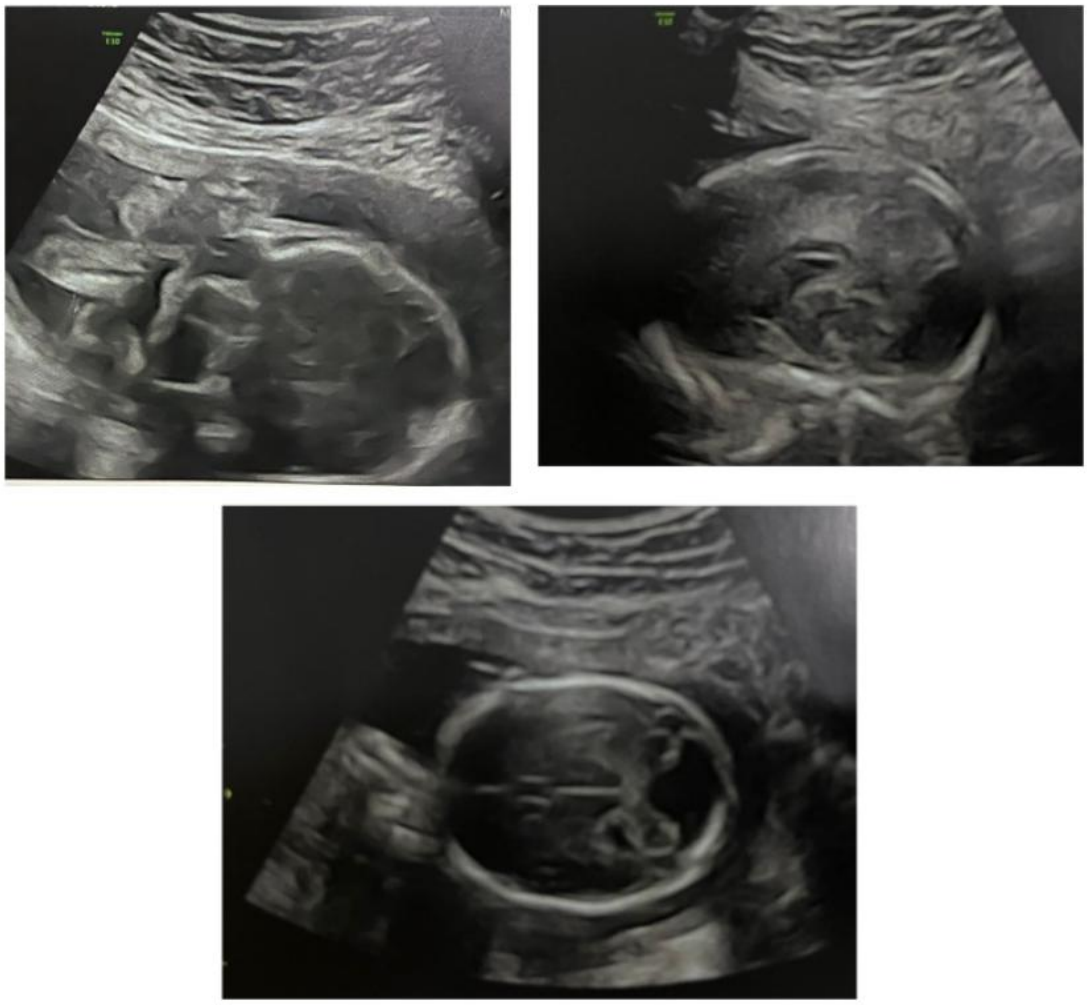

Figure 3: Second-trimester ultrasound shows cystic formation of posterior cerebral malformation.

(Source: Amghar et al. 2024)

The variables are not only that misdiagnosis affects prognosis but also generates parental anxiety that is not necessarily necessary. Amghar et al. (2024) described the unusual condition of Blake pouch cyst which simulated DandyWalker malformation during the second trimester but goes away entirely after 34 wk. These overlaps point to the need of specific imaging criteria such as vermian rotation angle, vermian-to-tentorium ratio and continuity of fourth ventricle. With less detailed biometric evaluation in a number of planes more than two, there are still the gravest chances of classification errors that indicate the importance of the fetal MRI with structured imaging protocols in later gestation.

Associated Neural Abnormalities

Abnormalities of posterior fossa are often combined with other neural defects that largely influence the prognosis. Mufti et al. (2022) further discovered that the prevalence of posterior fossa malformations linked with open spina bifida in fetuses is 86 percent, with the presence of Chiari II malformation in 71.2 percent and herniation of cerebellum in 54.6 percent. MRI disclosed corpus callosum agenesis in 13.8 percent and brainstem kinking in 22.9 percent, things that were not apparent in first ultrasound. According to Chapman et al. (2025), working with 52 cases of infratentorial anomalies, 42 percent of them were combined with supratentorial lesions, including periventricular heterogeneous or cortical anomalies. These correlations affect the risk of neurodevelopmental delay, seizure pathology and operative complexity. Masselli et al. (2021) reported high rates of extracranial anomalies (64 percent) in fetuses with cerebellar vermian agenesis, which further justifies the recommendation to perform whole-body MRI of the suspected syndromic cases. In addition, low posterior fossa volume below 10 th centile was associated with high risk of motor delay at the age of one year. These results affirm that posterior fossa malformations are hardly ever idiopathic and require longer scans and, perhaps, even genomic testing. The proper recognition of related defects can make clinicians give more realistic long-term prognoses and design postnatal care pathway.

Importance of Multimodal Imaging

The use of advanced ultrasound and fetal magnetic resonance imaging has its value in higher concordance between the diagnostic results. DallAsta et al. (2021), according to a prospective study with 104 fetuses, showed that Doppler measurement of the torcular herophili depicted an increase in the accuracy of measuring vermian orientation by 29%. In particular, the proportion of a match with postnatal imaging was 97.8 and 76.4 percent in the cases where prenatal vermian rotation and torcular flow were normal and examined individually and by MRI, respectively. In their work, Bütün et al. (2025) studied 60 cases with CNS anomalies and concluded that MRI of the prenatal period demonstrated a correct prenatal-postnatal outcome in 92 percent (posterior fossa) and 64 percent (ultrasound alone). Amghar et al. (2024) described a case when a posterior fossa cyst was identified by using an ultrasound, but the cystic Blake pouch with a compressed yet intact vermis was evidenced using the MRI, not as Dandy-Walker malformation. It has also been validated postmortem by video interviews of subjects that the concordance of the imaging refers to 68% to 94% concordance in using further enhancing methods of ultrasound associated with MRI. These analyses point out that multimodal imaging eliminates ambiguity not only in cases but also falsely identified cases of pregnancy and enhancing decision-making among parents. To maintain the integrity of diagnosis, there should be a growth in the use of the two modalities in clinical protocols especially when the early scans show inconclusive or borderline results.

Diagnostic Challenges and Terminology Variability

The case of terminological inconsistency is a big blow to both clinical clarity and comparisons of research. According to Kutty et al. (2022), the authors evaluated 124 cases in three tertiary centers and found, their terminologies such as inferior vermian hypoplasia, DandyWalker variant, or Blake cyst pouch were used interchangeably in 38 percent of the reports, even though they had different anatomical definition. In the same review, 27 percent of fetal MRI reports did not specify that the fourth ventricle linked with the cyst, one of the distinguishing features of Blake pouch and DandyWalker. Nicolae et al. (2022) have described an incorrectly diagnosed case of non-communicating cyst, which was identified as Dandy-Walker malformation and acted upon by the termination of an inappropriate pregnancy at a gestational age of 25 weeks.

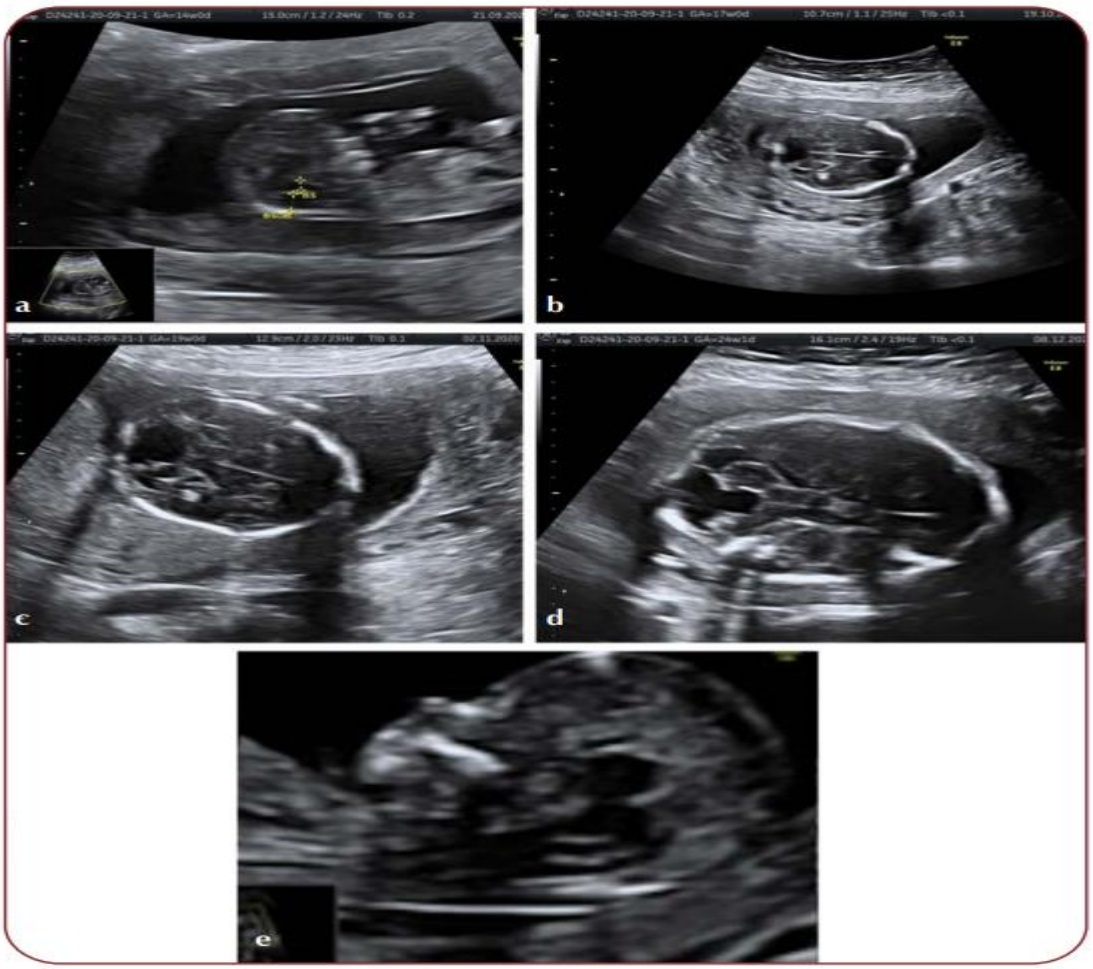

Figure 4: Ultrasound assessment of fetal posterior fossa and progressive diagnosis of Dandy–Walker malformation across gestation.

(Source: Nicolae et al. 2022)

It was determined that the addition of standardized checklists increased the level of diagnostic agreement between fetal radiologists that were matched to the point where the agreement was between 65-87 percent (Duc et al., 2021). Di Mascio et al. (2023) also focused on how the presence of a consistent imaging template in multicenter studies reduces the reclassification of lesions, providing an example related to the reclassification reduction of 24% to 9% in the studies in case of adopting structured MRI protocols. Such discrepancy, besides causing problems in clinical communication, distorts epidemiological data. It is urgent to develop and enforce diagnostic lexicons that allow setting up a benchmark in terms of anatomy to decrease the variability. Homogenous descriptors will assist the harmonization of the research, outcome monitoring, and more explicit counseling, particularly the less penetrating or convergent fetal brain anomalies.

5. CONCLUSION

In this study, it has been established that fetal MRI vastly increases the accuracy of the diagnostics of the pathologies of the posterior formations in comparison with ultrasound, both in simple and in complicated cases. The results indicate that ultrasound can detect up to 45 percent fewer abnormalities that will be further identified by MRI subsequently: whereas multimodal imaging leads to an increase in diagnostic agreement by 32 percent to 92 percent. Inconsistency in term, inappropriate imaging planes continues to present a significant difficulty in misclassification. Angle of choroid plexus and torcular also prove to be good early indicators. Standard, systematic imaging strategy and fingerprint limits are essential to the proper and correct classification, counseling, and prognosis. Introduction of the uniform diagnostic guidelines will minimize the differences and improve global accuracy in fetal neuro-imaging

REFERENCES

[1] Aboughalia, H., Noda, S., Chapman, T., Revzin, M.V., Deutsch, G.H., Browd, S.R., Katz, D.S. and Moshiri, M., 2021. Multimodality imaging evaluation of fetal spine anomalies with postnatal correlation. Radiographics, 41(7), pp.2176-2192.

[2] Alsehli, H., Alshahrani, S.M., Alzahrani, S., Ababneh, F., Alharbi, N.M., Alarfaj, N. and Baarmah, D., 2024. Fetal and neonatal outcomes of posterior fossa anomalies: a retrospective cohort study. Scientific Reports, 14(1), p.8411.

[3] Amghar, A., El Abbassi, I., Mohammed, J., Asmaa, A., Amine, L. and Bouhya, S., 2024. Radiological characteristics of the posterior fossa of the fetal skull and presentation of a rare case of antenatal screening for Dandy-Walker malformation using antenatal fetal ultrasound and MRI. International Journal of Surgery Case Reports, 115, p.109037.

[4] Bian, W., Zheng, W., Liu, Z., Luo, Q. and Sun, L., 2025. Utilization of MRI in Fetal Surgery. iRADIOLOGY.

[5] Bowker, R.M., Marathu, K.K., Pharel, M., Adepoju, J.O., Vahedifard, F., Adler, S., Kocak, M., Liu, X. and Byrd, S.E., 2025. Utility of Biometric Measurements from Fetal Magnetic Resonance Imaging for Improved Antenatal Diagnosis of Dandy–Walker Spectrum Posterior Fossa Lesions. Diagnostics, 15(10), p.1295.

[6] Bütün, Z., Kayapınar, M. and Şenol, G., 2025. Comparison of USG-MRI and post-natal results of Cases with anomalies detected in fetal CNS examination. Ginekologia Polska.

[7] Chapman, T., Mirsky, D.M., Iruretagoyena, J.I. and Guimaraes, C.V., 2025. Prenatal diagnosis of infratentorial anomalies: ultrasound, fetal MRI, and implications for counseling. Pediatric Radiology, pp.1-20.

[8] Dall'Asta, A., Grisolia, G., Volpe, N., Schera, G.B.L., Sorrentino, F., Frusca, T. and Ghi, T., 2021. Prenatal visualisation of the torcular herophili by means of a Doppler technology highly sensitive for low-velocity flow in the expert assessment of the posterior fossa: a prospective study. BJOG: An International Journal of Obstetrics & Gynaecology, 128(2), pp.347-352.

[9] Di Mascio, D., Rizzo, G., Khalil, A., D'Antonio, F., ENSO Working Group, Di Mascio, D., Rizzo, G., Khalil, A., Giancotti, A., Manganaro, L. and Visentin, S., 2023. Role of fetal magnetic resonance imaging in fetuses with congenital cytomegalovirus infection: multicenter study. Ultrasound in Obstetrics & Gynecology, 61(1), pp.67-73.

[10] Duc, N.M., Nhung, N.T.H., My, T.T.T., Luu, D.T. and Van Lenh, B., 2021. Detecting fetal central nervous system anomalies using magnetic resonance imaging and ultrasound. Medical Archives, 75(1), p.45.

[11] Eric Ozdemir, M., Demirci, O., Ayvaci Tasan, H., Ohanoglu, K. and Akalin, M., 2021. The importance of first trimester screening of cranial posterior fossa in predicting posterior fossa malformations which may be identified in the following weeks of gestation. Journal of Clinical Ultrasound, 49(9), pp.958-962.

[12] Feng, L., Sun, L., Wang, J., Sun, C., Lu, L., Zhang, Z., Hu, Y. and Wu, Q., 2022. Qualitative and quantitative study of fetal posterior fossa during the first trimester in a Chinese population. BMC Pregnancy and Childbirth,

22(1), p.760.

[13] Gupta, N., Martinez-Rios, C., El Demellawy, D., Barrowman, N. and Miller, E., 2021. Diagnostic Evaluation of the Posterior Fossa with Antenatal and Post-Mortem MRI: An Unfolded View. Journal of Fetal Medicine, 8(04), pp.279-291.

[14] Jain, A. and Shankar, K., 2021. Antenatal Posterior Fossa Cystic Malformations. Perinatology, 21(4), pp.183-9.

[15] Kutty, S., Clarke, G. and Kutty, J., 2022. Challenges in the pre-and post-natal diagnosis of posterior fossa cysts: A case report and review of historical evolution of descriptive terminologies. Surgical Neurology International, 13, p.449.

[16] Mahalingam, H., Rangasami, R., Seshadri, S. and Suresh, I., 2021. Imaging spectrum of posterior fossa anomalies on foetal magnetic resonance imaging with an algorithmic approach to diagnosis. Polish journal of radiology, 86(1), pp.183-194.

[17] Masselli, G., Cozzi, D., Ceccanti, S., Laghi, F., Giancotti, A. and Brunelli, R., 2021. Fetal body MRI for fetal and perinatal management. Clinical Radiology, 76(9), pp.708-e1.

[18] Mckinnon, K., Kendall, G.S., Tann, C.J., Dyet, L., Sokolska, M., Baruteau, K.P., Marlow, N., Robertson, N.J., Peebles, D. and Srinivasan, L., 2021. Biometric assessments of the posterior fossa by fetal MRI: a systematic review. Prenatal diagnosis, 41(2), pp.258-270.

[19] Miller, E., Orman, G. and Huisman, T.A., 2021. Fetal MRI assessment of posterior fossa anomalies: a review. Journal of Neuroimaging, 31(4), pp.620-640.

[20] Mufti, N., Sacco, A., Aertsen, M., Ushakov, F., Ourselin, S., Thomson, D., Deprest, J., Melbourne, A. and David, A.L., 2022. What brain abnormalities can magnetic resonance imaging detect in foetal and early neonatal spina bifida: a systematic review. Neuroradiology, pp.1-13.

[21] Nagaraj, U.D. and Kline-Fath, B.M., 2022. Clinical applications of fetal MRI in the brain. Diagnostics, 12(3), p.764.

[22] Nagaraj, U.D., Kline-Fath, B.M., Horn, P.S. and Venkatesan, C., 2021. Evaluation of posterior fossa biometric measurements on fetal MRI in the evaluation of Dandy-Walker continuum. American Journal of Neuroradiology, 42(9), pp.1716-1721.

[23] Nicolae, G.I.C.A., Panaitescu, A.M., Corina, G.I.C.A., Dumitru, A., Botezatu, R., Peltecu, G. and Vayna, A.M., 2022. Ultrasound appearance of fetal posterior fossa and a case report of prenatal diagnosis of Dandy-Walker malformation. Maedica, 17(2), p.505.

[24] Schlatterer, S.D., Sanapo, L., du Plessis, A.J., Whitehead, M.T. and Mulkey, S.B., 2021. The role of fetal MRI for suspected anomalies of the posterior fossa. Pediatric Neurology, 117, pp.10-18.

[25] Şeker, E., Aslan, B., Aydın, E. and Koç, A., 2023. Long-term outcomes of fetal posterior fossa abnormalities diagnosed with fetal magnetic resonance imaging. Journal of the Turkish German Gynecological Association, 24(1), p.28.

[26] Taşdemir, Ü., Eyisoy, Ö.G., Karaman, A. and Demirci, O., 2025. Ultrasonographic evaluation of fetal posterior fossa anomalies: Six years experience of a tertiary center. Journal of Clinical Ultrasound, 53(1), pp.24-32.

[27] Volpe, P., De Robertis, V., Volpe, G., Boito, S., Fanelli, T., Olivieri, C., Votino, C. and Persico, N., 2021. Position of the choroid plexus of the fourth ventricle in first-and second-trimester fetuses: a novel approach to early diagnosis of cystic posterior fossa anomalies. Ultrasound in Obstetrics & Gynecology, 58(4), pp.568-575.