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Research Article

Determination of Mean Fetal Cisterna Magna Length in Pregnant Patients of Consanguineous and Non Consanguineous Marriages

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Abstract: We aim to analyze the difference in themean fetal cisterna magna length in second trimester among the consanguineous and non-consanguineous marriages in Indian population, in this retrospective cross sectional study. Study was carried out in the Department of Radiology, Sree Balaji Medical College and Hospital, Chennai, from November 2017 – November 2019. A total of 1067 patients in their second trimester (18–24 weeks of gestation) were included in this study (740 Non consanguineous and 327 consanguineousmarriages). Anteroposterior measurement of Fetal Cisterna magna was measured in the axial plane of the fetal head, at the level of transverse cerebellar diameter , from the posterior aspect of cerebellar vermis to inner table of the occipital bone in midline. Mean cisterna magna length was 4.28 mm in consanguineous marriages and 4.29 mm in non consanguineousmarriages. There is no significant difference in mean fetal cisterna magna length inconsanguineous marriages and non consanguineous marriages in this period of gestation. No article in literature has compared the cisterna magna length with consanguineous and non consanguineous marriages.

Keywords: Cisterna magna, length, Consanguineous marriages, Non consanguineous marriages.

INTRODUCTION

Evaluation of the fetal posterior fossa is an important part of assessing the nervous system because a variety of malformations may occur, including Dandy-Walker syndrome, Mega cisterna magna, and Hypoplasia/hypogenesis of the vermis [1]. Measurement of the anteroposterior length of the fetal cisterna magna, done in the second trimester of pregnancy, is an important parameter for identifying several abnormalities of the posterior fossa. Most authors have taken 10 mm to be the upper limit for diagnosing abnormalities of the posterior fossa [2-4], although some other authors have shown that the length of the cisterna magna increases with increasing gestational age [5, 6]. It is known that ethnicity has an influence on the magnitude of the transverse diameter of the fetal cerebellum [7], but there are no studies assessing ethnicity in relation to measurements on the length of the cisterna magna among consanguineous and non consanguineous marriages.

Several scientific studies have shown that consanguinity leads to increased incidence of genetic and congenital anomalies [9, 10]. One of the major factors contributing to the increased risk of congenital malformation and infant mortality is consanguineous marriage [11-13]. Only few studies have evaluated the behavior of measurements of the anteroposterior diameter of the fetal cisterna magna during the second trimester of gestation, in different populations [5, 8]. However No article in literature has compared the cisterna magna length with consanguineous and non consanguineous marriages.

The aim of this present study was to determine the mean fetal cisterna magna length and to compare it with both consanguineous and non consanguineous group patients.

MATERIALS AND METHODS

A total of 1067 healthy pregnant patients in their second trimester (18–24 weeks of gestation) were included in this study with history of non consanguineous marriages in 740 patients and consanguineous marriages in 327 patients. The Study was conducted from November 2017 till November 2019 for pregnant women referred for second trimester ultrasonography to our Department Of Radiology, Sree Balaji Medical College And Hospital , Chennai, after getting their written informed consent.

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Cisterna magna was measured from the posterior margin of the cerebellar vermis to the inside of occipital bone in midline

In this study we emphasize on the fetal cisterna magna size in second trimester among our patients with the history of both consanguineous and non-consanguineous marriages and its efficacy and reliability.

Cisterna magna length was obtained by the following methods. The landmarks of the thalamus and the cavumpellucidum and third ventricle were identified. Then by slightly rotating the transducer below the thalamic plane, the trans cerebellar plane is identified by obtaining an oblique view through posterior fossa that included visualization of midline thalamus, the characteristic butterfly like appearance of the cerebellar hemispheres and cisterna magna, just posterior to the cerebellum. These examinations were performed with low frequency 3.5 MHZ transducer [7].

Fig-1: Distribution of Marriages

STATISTICAL ANALYSIS

The measured values were analyzed statistically using Microsoft Excel Statistical package. The measured values were used to compare the results between the two groups of patients that we have taken for this study. Normograms were derived by taking 25th, 50th and 75th percentile values in all patients .The mean Cisterna magna values between the two groups are compared for any significant difference. The comparative statistical analysis was given below (Figure-1).

TYPE OF MARRIAGES			CISTERNA MAGNA SIZE
CONSANGUINEOUS MARRIAGE	Mean		4.2844 mm
	Std. Deviation		.56087
	Percentiles	25	2.0000
		50	2.0000
		75	2.0000
NON CONSANGUINEOUS MARRIAGE	Mean		4.2959 mm
	Std. Deviation		.51261
	Percentiles	25	2.0000
		50	2.0000
		75	2.0000

RESULTS AND DISCUSSION

A thorough knowledge about the fetal cisterna magna and Prenatal diagnosis of posterior fossa abnormalities is of utmost importance for routine obstetric examination and follow up of pregnancy [14].

In this study we have compared the measurements of cisterna magna in both consanguineous and non-consanguineous marriages.

Our results also showed that cisterna magna is not affected by the consanguity of marriage as the mean cisterna magna was4.28 mm in consanguineous marriages and 4.29 mm in non consanguineous marriages and there was no significant difference. No article in literature has compared the cisterna magna length with consanguineous and non consanguineous marriages.

CONCLUSION

Evaluating the width of cisterna magna may enable to establish early diagnosis of defects and anomalies which may exist in posterior fossa and adjacent organs. Deviation from their normal appearances should prompt a closer assessment for associated abnormalities of the cerebellum, vermis, and brain stem.

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