ORIGINAL RESEARCH PAPER

Gynaecology

NUCHAL TRANSLUCENCY AS APREDICTOR OF ADVERSE FOETAL OUTCOME

KEY WORDS:

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ABSTRACT

Nuchal translucency is the sonographic appearance of subcutaneous accumulation of fluid behind the fetal neck in the first trimester of pregnancy. Thickened nuchal translucency has been related to fetal genetic syndromes and structural abnormalities .Fetal nuchal translucency normally increases with gestation. Thickened nuchal translucency is also associated with fetal cardio vascular, pulmonary defects and skeletal dysplasia. In India, the incidence is 1 in 600-700.

A prospective observational clinical study was done on 300 pregnant women between 11-14 weeks of gestation who were randomly selected over a period of 2 years who attended the antenatal clinic at Institute of Obstetrics and Gynaecology, Egmore, Chennai. Screening by fetal nuchal translucency was performed for all the 300 pregnant women. In this study, 13[4.33%] of pregnant women had NT above 95 th percentile. 287 [95.67%] of pregnant women had NT less than 95 th percentile. Out of 13, 3 opted for MTP. Though significant reassurance can be given by a normal NT scan, follow up anomaly scan at 20 weeks irrespective of the NT status is a must as many structural defects can be detected in the 20 weeks scan even in the normal NT group.

Introduction:

- Nuchal translucency is the sonographic appearance of subcutaneous accumulation of fluid behind the fetal neck in the first trimester of pregnancy.
- Thickened nuchal translucency has been related to fetal genetic syndromes and structural abnormalities .Fetal nuchal translucency normally increases with gestation. Thickened nuchal translucency is also associated with fetal cardio vascular, pulmonary defects and skeletal dysplasia.
- Increased NT is also found to be associated with trisomy 21, Turner's syndrome and other chromosomal defects. The optimal gestational age for measurement of fetal NT is 11 weeks to 13 weeks +6 days. The minimal fetal crown –rump length should be 45 mm and the maximum is 84 mm. The upper limit is to provide women with affected fetus, the option of termination of pregnancy in first trimester, rather than second trimester. Increased nuchal translucency was found to be associated with threatened preterm labour & preterm labour in euploid fetus.
- Chromosomal abnormalities are important causes of perinatal death and childhood handicap. The incidence of significant chromosomal abnormalities and birth defects is 3%, out of which 66% constitutes Down's syndrome (Trisomy 21).
- Down's syndrome is the cause of 25% of severe mental retardation in children and throughout the world the frequency is about 0.13%of births.
- In India, the incidence is 1 in 600-700.It is important to screen for Down's syndrome because the fetus usually survives with mental and physical disabilities. Hence prenatal screening is important to reduce the incidence of Down's syndrome.
- Screening is done between 10-14 weeks of gestation, using the sonographic measurement of the fetal nuchal translucency alone or in combination with other sonographic and serum markers (PAPP-A + beta HCG). Chromosomal abnormalities may be present in 45%-70% of cases between 10-14 weeks of gestation. It has been known that 50% of miscarriages are due to chromosomal abnormalities.

Aim and Objective:

- To detect increased fetal nuchal translucency in pregnant women with viable singletone pregnancies between 10-14 weeks of gestation.
- To assess its usefulness in identifying fetuses at risk for chromosomal abnormalities and congenital anomalies.

Materials and Methodology:

Design of Study:

- Prospective observational study performed at IOG Egmore, Chennai during a time period of two years.
- This prospective study has been conducted on 300 pregnant women, between 10-14 weeks of gestation with singleton pregnancies and reliable LMP details attending antenatal OP

Period of study:

Two years

Inclusion Criteria:

All antenatal women who attended Antenatal OPD underwent scan between 11-14 weeks, when the nuchal translucency was measured.

Exclusion Criteria:

- Pregnancy less than or equal to 10 weeks +6 days
- Pregnancy greater than or equal to 14 weeks +1 day
- Lost in follow up cases.

Based on the above mentioned inclusion criteria, the patients were selected and the following are noted:

- Fetal crown –rump length is measured (45 mm to 84 mm), in mid sagittal plane of fetus in the neutral position. The image is zoomed so that only the head and neck can be visualized.
- The maximum thickness of subcutaneous translucency between the skin and soft tissue overlying the cervical spine was measured.
- Three measurements were performed and the highest value was considered.
- High resolution USG equipment Voluson 730 expert machine was utilized.

The following parameters were observed

- Age
- Parity
- Chromosomal abnormalities
- Structural defects
    - CNS anomalies
    - Cranio facial anomalies
    - Skeletal anomalies
    - CVS anomalies

- Gastro intestinal anomalies
- Renal anomalies
- Syndromes

- Abortions
- IUD
- IUGR
- Preterm

Table 1: Showing the NT Mom (multiples of median) Chart Grouping

Group A (more than 95th percentile)	13(4.33%)
Group B (less than 95th percentile)	287(95.67%)
Total No .of patients	**300**

Table 2: Showing the Age Distribution in Both the Groups

AGE	n=300		NT>95th percentile group a (x=13)		NT =95TH PERCENTILE GROUP B (Y=287)	
	n	%	X	%	Y	%
≤19 Years	2	0.67%	0	0	2	0.69%
20-25 Years	139	46.33%	3	23.07%	136	47.39%
26-30 years	127	42.33%	5	38.47%	122	42.50%
31-35 Years	20	6.67%	4	30.77%	16	5.59%
>35 Years	12	4%	1	7.69%	11	3.39%

The mean age of patients in both the groups (A&B) was 26.24±3.38 (SD) (range 20-30 years)

Table 3: Showing Parity Distribution among Group A and Group B

PARITY	TOTAL n=300		NT>95TH PERCENTILE GROUP A (X=13)		NT<95TH PERCENTILE GR0UP B (N=287)	
	N=300	%	X	%	Y	%
PRIMI	188	62.67%	11	84.61%	177	61.68%
MULTI	112	37.33%	2	15.39%	110	38.32%

The maximum number of patients were among prim gravida in both the groups (A and B) which were 84.61% and 61.68% respectively

Table 4: shows The Distribution of Normal and Abnormal Karyotyping by Amniocentesis

NT>95TH PERCENTILE	X-13	%
Normal	12	92.30%
Abnormal	Nil	0

Table 5: Depicts the Distribution of Anomalies in both Group A and Group B

ANOMALY SCAN	NT>95TH PERCENTILE GROUP A		NT<95TH PERCENTILE GROUP B	
	X=13	100%	Y=287	100%
ABNORMALLITIES	3	30%	17	5.92%

Table 6: Types of Anomalies in Both the Groups

ANOMALIES	NT>95TH PERCENTILE GROUP A X=10		NT<95TH PERCENTILE GROUP B Y=287	
		%AGE		%AGE
Cardiovascular	3	30%	4	1.40%
CNS Anomalies	0	0	5	1.74%
Skeletal Anomalies	0	0	1	0.30%
Cranio Facial Anomalies	0	0	2	0.70%
Renal Anomalies	0	0	2	0.70%
Gastro Intestinal	0	0	3	1.04%
Syndromes	0	0	0	0
Chromosomal	0	0	0	0

P<0.05 Hence there is a Statistically Significant Co-relation between Increase in Nuchal Translucency with Cardiac Anomalies.

Table 7: Showing Other Observations in Group A

>95TH PERCENTILE	13	%(4.33%)
TERMINATION (MTP)	3	23.10%
ABORTIONS	0	0%
ANOMALIES	3	23.10%
PRETERM	3	23.10%
IUGR	0	0%
IUD	0	0%
No complications	4	30.70%
Total	**13**	**100%**

With Increase in NT, 3 CVS Anomalies Were Noted Which Was Statistically Significant In Our Study.

Table 8: Showing Other Observations in Group B

<95TH PERCENTILE	287	%(95.67%)
Termination(MTP)	0	0%
Abortions	18	6.28%
Anomalies	17	5.92%
Preterm	14	4.88%
IUGR	9	3.13%
IUD	7	2.43%
No complications	222	77.35%
TOTAL	**287**	**100%**

Summary:

- In this prospective observational clinical study, 300 pregnant women between 11-14 weeks of gestation were randomly selected over a period of 2 years who attended the antenatal clinic at Institute of Obstetrics and Gynaecology, Egmore, Chennai
- In this study, screening by fetal nuchal translucency was performed for all the 300 pregnant women between 11-14 weeks of gestation.
- In this study screen positive i.e., NT >95th percentile were grouped into group A and were offered invasive testing for the confirmation of fetal karyotyping by amniocentesis.
- The outcome increased NT was judged by confirming chromosomal abnormalities, (by offering invasive testing by amniocentesis for fetal karyotyping), anomaly scan, fetal 2D ECHO (for cardiac defects).NT<95th percentile were grouped into group B and the outcome of normal NT was judged by anomaly scan.
- In this study majority of pregnant women who were screen positive i,e.,NT >95th percentile were between 26-30 years age group.
- Primi gravida were more in both the groups
- In this study, 13[4.33%] of pregnant women had NT above 95 th percentile.287 [95.67%] of pregnant women had NT less than 95 th percentile.
- Out of 13[4.33%] patients with increase in NT, 3(30%) patients opted for termination of pregnancy, inspite of counselling.
- In the remaining 10 patients with increase in NT, 3 (30%) patients had congenital anomalies for the fetuses. All three were cardiovascular anomalies. 3 patients went into preterm labour.
- In group B, 17(5.82%) congenital anomalies were detected inspite of normal NT screening.

Conclusion:

- In our study measurement of nuchal translucency at 11-14 weeks of gestation, identified fetuses at risk for chromosomal abnormalities and cardiac anomalies.
- Though significant reassurance can be given by a normal NT scan, follow up anomaly scan at 20 weeks irrespective of the NT status is a must as many structural defects can be detected in the 20 weeks scan even in the normal NT group.