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Original article:

Study of evaluation of fetal nuchal translucency in pregnant women at tertiary care hospital

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Abstract:

Introduction: Chromosomal anomalies are associated with considerable morbidity and mortality so one of the aims of antenatal care has therefore been to identify fetuses with these disorders in order to give parents the option of terminating such pregnancy.

Material and methodology: The present descriptive cross sectional study was carried out on 450 patients in the department of Radio-diagnosis, Rural medical college, PIMS (D.U), Loni from September 2018 to September 2020. Study population included pregnant women of 11-14 weeks of gestation referred to Department of Radiodiagnosis, at Rural medical college, PIMS (DU), Loni, for theultrasonography.

Results : Increased Nuchal translucency (more than 95th percentile) was found in 15(3.33%) patients and normal nuchal translucency(less than 95th percentile) was found in 435(96.67%)patients.

Conclusion: From this study, we conclude that , using ultrasound markers like nuchal translucency (NT) high risk fetuses can be identified early at 11-14 weeks of gestational age.

Keywords: Nuchal translucency ,ultrasound , Radiological

Introduction:

Chromosomal anomalies are associated with considerable morbidity and mortality so one of the aims of antenatal care has therefore been to identify fetuses with these disorders in order to give parents the option of terminating such pregnancy.[1]Advances in biochemical screening, combined with the excellent display of fetal dysmorphology afforded by technological advances in ultrasound equipment have resulted in a paradigm shift in the diagnosis of chromosomal abnormalities in the fetus from the second trimester to the late first trimester. [2]The accuracy of diagnosis as reported in multiple large series from various parts of the globe over the past decade and a half has pushed both screening and diagnostic testing for chromosomal disorders to the window now referred to as the 11 to 13 weeks + 6 daysscan.[2]There are several advantages of early diagnosis apart from the ease and safety of first trimester termination. These include social privacy for the couple, since pregnancies can remain unannounced at this stage and a fairly lesser degree of parental fetal bonding resulting in an easier situation with reference to coping with a loss. Importantly, nuchal translucency the cornerstone of diagnosis may regress by 14 weeks of gestation.[3,4]

First-trimester screening using fetal NT have a high detection rate of fetuses with trisomy 21, 18, 13,

Turner syndrome and triploidy. Adding other sonographic markers like nasal bone, tricuspid regurgitation and ductus venosus blood flow wave form improve this detection rate.[5]With this objective , present study was planned to study of evaluation of fetal nuchal translucency in pregnant women at tertiary care hospital.

Material and methodology:

The present descriptive cross sectional study was carried out on 450 patients in the department of Radio-diagnosis, Rural medical college, PIMS (D.U), Loni from September 2018 to September 2020. Study population included pregnant women of 11-14 weeks of gestation referred to Department of Radiodiagnosis, at Rural medical college, PIMS (DU), Loni, for theultrasonography. 450 cases of 11-14 weeks of pregnancy. (As per Open Epi method) was study sample in our study.

Inclusion criteria:

1. All patients of 11-14 weeks of gestation with reliabledates.
2. Singleton viable intrauterinegestation
3. Patients who are ready to give written informedconsent.
4. Patients with fetal crown rump length between 45 to 84 mm.

Exclusion criteria:

1. Multiplegestations.
2. Patients not ready for the studyconsenting.

Equipment: Toshiba Xario ultrasound machines.

Results:

A total of 450 pregnant women with 11-14 gestational age referred to Department of Radiodiagnosis evaluated for nuchal translucency in Department of Radiodiagnosis.

109(24.2%) patients were ≤ 20 year age, 232(51.5%) patients were in the age group of 21 to 25 years. 90 (20%) patients were in the age group of 26 to 30 years. 19(4.2%) patients were in the age group of ≥30 years. In this study, Mean age of pregnant women was 23.47 years, mean Crown Rump Length was 66.45, mean GA in weeks was 12.54 and mean Nuchal Translucency was 1.6 mm.

Table 1: Normal and increased NT distribution of the study.

Nuchal translucency	Patients	Percent
Normal (< 95thpercentile)	435	96.67 %
Increased (> 95thpercentile)	15	3.33 %
Total	450	100

Increased Nuchal translucency (more than 95th percentile) was found in 15(3.33%) patients and normal nuchal translucency(less than 95th percentile) was found in 435(96.67%) patients.

Discussion:

The first trimester screening in pregnancy is very effective in on diagnosing the chromosomal abnormalities. Ghaffari and colleagues in Iran on over 13,437 women showed that ultrasound secondary factors including the nasal bone, tricuspid regurgitation (TR) and ductusvenosus flow (DV) accompanied by NT and serum markers have increased accuracy of diagnosis of chromosomal abnormalities.[6]The finding of increased NT should first stimulate further assessment for fetal defects, especially those of the heart and great arteries, second, lead to counseling of the parents concerning the risk for chromosomal abnormalities and offer of invasive testing or cell-free DNA testing and third arrange follow-up scans in the subsequent 2–3 weeks for further assessment of the fetal anatomy and evolution of the increasedNT.[6]
In this study, total of 450 antenatal women were screened for fetal nuchal translucency. Majority (41.8%) of the women were screened between 12-12+6 weeks of gestation. Majority (51.5%) of the women were between 21-25 years of age. Only 4.2 % of the women were above 30 years.Mean age was 23.47 years, Crown Rump Length (CRL) was 66.47 mm, GA in weeks was 12.54 and Nuchal Translucency was 1.6005 mm. Mean age of women in study was less than most previous studies. Mean age was 27.88 year and CRL was 62.81 mm according to Kunapareddy M and Vavilala S (2020)[8] Similar results also found by Karadeniz (2016)[9]etal.

The mean NT in the present study was 1.6005 mm which was lower than Australian population (1.7) mm.[8,9] Various other studies have also found that the NT values differ among populations. So it would be great helpful if reference value of NT developed as per different regions and ethnics worldwide.Sahi G and Khurana A. in 2002, studied the Nuchal translucency at 11 to 13+6 weeks of gestation in an Indian population and found that nuchal translucency at any crown-rump length is thinner in the Indian population compared to Caucasian populations. Similar results found in our study. A larger study is needed to reconfirm this variation and to make necessary changes in proprietary software to appropriately assess the risk for chromosomal anomalies at a relatively thinner nuchal translucency.[10]

Out of 450 women, 96.67 % of pregnant women had normal nuchal translucency (NT<95th percentile) and Increased nuchal translucency thickness (NT) (>95th percentile) was found in 15(3.33 %) scans. Incidence of increased nuchal translucency in our study was 3.33 %. Kunapareddy M and Vavilala S (2020)[9] recorded 272 fetuses of increased nuchal translucency (95th percentile) out of 5917 fetuses with 4.59 % incidence of increased NT. In the largest study, coordinated by the FMF, 100,311 singleton pregnancies were examined by 306 appropriately trained sonographers in 22 UK centers (Snijders et al 1998) recorded 5% incidence of increased nuchal translucency[11]. Incidence of increased NT in our study is less as compared with various other studies. This could be due to young age of our study population as prevalence of chromosomal abnormalities increases as maternal age increases.[12] Fetal nuchal translucency range was 0.92 to 15.83 mm in our study.

Conclusion:

From this study, we conclude that, using ultrasound markers like nuchal translucency (NT) high risk fetuses can be identified early at 11-14 weeks of gestational age.

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