

SEX DETERMINATION ON TRASONPGRAPHY

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ABSTRACT

Objective: To determine the sex of fetus by ultrasonography in Co-relation with the age of mother or just to know that in which age group female or male is more common. **Setting:** Department of Radiology and Imaging Chandka Medical College, Larkana. **Period:** From March 2002 to August 2002. **Material & Methods:** Total number of 556 mothers were scanned trans abdominally ranging from below 20 years to 50 years by B mode ultrasonography, using 3.5 MHz transducer. **Result:** Males were found is 276 mothers. Females were found is 280 mothers. Thus female superceded male by 0.7% in our study. **Conclusions:** There is no importance of the age of a mother for having male child. However mothers of mean age 23 and 38 shows negligible dominancy of 4.3% and 6.3% male fetal gender.

INTRODUCTION

Parents have always been anxious about the gender of their baby, about to be delivered. There is very high desire for having boy than girl in our society. Although both have equal rights in the modern world as well as in the Islamic worlds.

There was no method for dynamic visual observation of in utero or fetus for determining sex of fetus during intrauterine period before the advent of ultrasonography. Fetal sex determination has become quite common since the advent of the B

mode ultrasonography.

B mode sonography detects the gender of baby after 27 weeks of gestation. In our view 27-28 week gestational age is the ideal age for detecting the sex of a baby. Embryologically development of gender depend upon the sex chromosome and it is well proved.

In this study we have tried to determine the sex of baby during intrauterine life by B mode ultrasonography and correlated with the age of a

mother or in other world, we were keen to know the relation of female and male with the age of mother or in which age group male is more common.

Visualization of external genitalia during ultrasonography is clinically important for detection of fetus at risk for severe X-linked disorders¹.

Ultrasonographic documentation of testis in the scrotum provides 100% gender determination during intra uterine period between 28 week to 38 week². Some times fetal gender especially testies and the scrotum can be detected even at 22 weeks of gestation³.

PATIENT & METHODS

This work was carried out in the department of Radiology and imaging Chandka Medical College Larkana from March 2002 to Aug 2002. Total number of mothers scanned for fetal sex determination were 568 ranging from below 20 years to 50 years. 12 mothers were excluded from this study (2.1%) due to inability to determine fetal sex.

Mothers were divided into seven groups according to their age, so the total number of mothers scanned was 556 and mean age was evaluated.

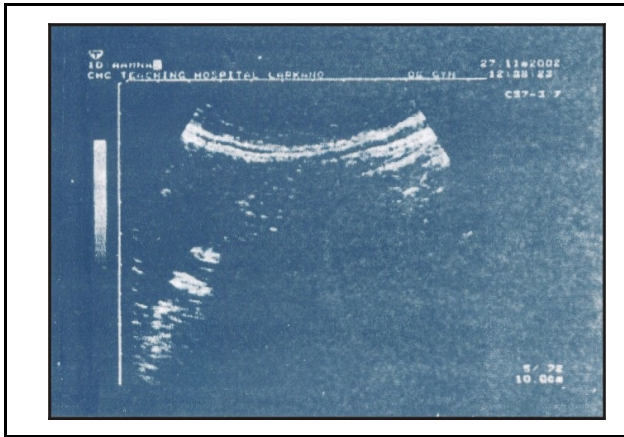
Group	Age	Mean age
A 1 st group	Below 20 years	19 y ears
B 2 nd group	21-25 years	23 years
C 3 rd group	26-30 years	28 years
D 4 th group	31-35 years	33 years
E 5 th group	36-40 years	38 years
F 6 th group	41-45 years	43 years
G 7 th group	46-50 years	48 years

The sex of baby was determined in correlation with the age of mother through trans abdominal scan of the abdomen and pelvis with 3.5 MHz. transducer. Preparation of patient was usually not required. The sex of fetus was determined.

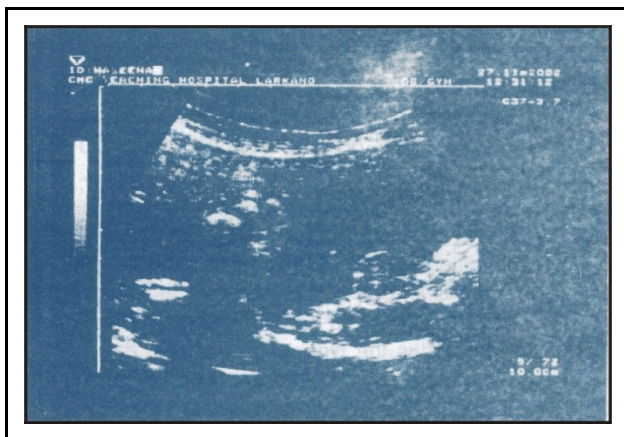
The average scanning time for determination of sex was variable between 04 to 10 minutes depending upon the gestational age of the fetus, as in advanced gestational age the sex de,3rmination becomes difficult and time consuming due to large size of the fetus, amount of liquor, superimposition of the thigh and buttock shadowing and limiting scanning range.

RESULTS

- 34 mothers below 20 years (mean age 19) were scanned and found to have equal percentage of female and male fetus.
- 165 mothers between 21-25 (mean age 23) years showed 47.8% XX and 42.1% XY fetus.
- 184 mothers between 26-30 years (mean age 28) showed 51.0% female and 48.9% male fetus.
- 94 mothers between 31-35 years (mean age 33) showed 52.2% female and 46.7% male fetus.
- 64 mothers between 36 and 40 years (mean age 38) years showed 46.8% female and 53.1% male fetus.
- 14 mothers between 41 and 45 years (mean age 43) years showed 57.1% female and 42.8% male.



Only one mother of 47 years was scanned during period of this study showed female fetus. All groups showed dominancy of female fetus except group B with mean age 23 and group E with mean age 38 which showed dominancy of male by the difference of 4.3% and 6.3% (Table II).



The group A showed equal number of male and female fetuses. There were 278 female and 276 male among total number of 556 mothers. Thus there were only 0.7% dominancy of female noted in our study.

DISCUSSION

The urogenital system is divided into urinary system (excretory) and genital system (reproductive system). Embryologically the systems are closely

associated, especially in adult male as the urethra allows passage of urine, and semen. The systems are different in normal adult females.

Before the seventh week, the gonads of two sexes are of identical appearance and are called indifferent gonade⁴. Development of male phenotype require a Y chromosome, but only a short arm of this chromosome is critical for sex determination. The SRY gene for a testis determining factor (TDF) of Y chromosome has been localized in the sex determining region of the Y chromosome⁴.

Embryo with Y chromosome in their sex chromosome develop testies. The development of tunica albuginea is the characteristic and diagnostic feature of testicular development in the fetus.

Gonadal development takes place slowly in female embryo. The X chromosomes bear gene for ovarian development. X autosomal gene also appears to play a important role in the ovarian organogenesis⁵. The ovary is not identifiable in fetus on sonography.

No intermediate sex or inter sexuality or hermaphroditism was observed. Hermaphroditism implies a discrepancy between the morphology of the gonads (testis/ovaries) and the appearance of external genitalia. A fetus/baby with ambiguous external genitalia is an inter-sex or hermaphrodite³. Chromosomal and genetic sex is established at the time of fertilization and depends upon wether X-bearing sperms or a Y bearing sperms fertilize the X-bearing ovum. Thus the type of gonads that develop, is determined by the sex chromosome complex (XX or XY) as XX is denoted as female, and XY as male.

In female it is the shadow of labia majora and a shadow of vaginal canal which appear as echogenic line visible after 27 weeks onward and some time even after 25 weeks. Visualization of the Testis and

scrotum confirm the diagnosis as male fetus after 27 weeks. The fetal gender can also be determined by careful scanning of the perineum after 25 weeks of gestation and identifying the labia. Sometime observation is inconclusive while making the decision of male rather than female.

Unfortunately fetal position may prevent good visualization of the perineum in 30% cases³. In our study sex determination was difficult in 2.1% only as the study was conducted with high resolution ultrasound equipment with 250 grayscale and observed by the two sonologists while scanning.

Occasionally confusion can be caused by the presence of the umbilical cord or by the buttock shadow obscuring the clear view especially in late stage when fetus is in flexed posture or compressed or in breach presentation⁶.

Oligo-hydromnios, 40 weeks gestation or the

position of fetal thigh also cause difficulty in detecting the fetal gender. In this study we were keen to know the relation of male gender in correlation with the age of mother.

Negligible dominancy of male was seen in group B and E (table I).

The intra uterine development of male and female gender is well established however in our study group B and E showed minimal male dominancy of 4.3% and 6.3% respectively (table-1).

In our society disclosing the gender especially female to parents seems to be quite difficult by the sinologist. Following lines by one of the famous sonologists will help sonologist while making the conclusive decision and disclosing, that to most parents anxious to know the foetal sex, we inform the parent about the fetal gender but say that there is a chance that we are wrong even if we are certain⁷.

Table II

Below 20 years		21-25 years		26-30 years		31-35 years		36-40 years		41-45 years		46-50 years	
XX	XY	XX	XY	XX	XY	XX	XY	XX	XY	XX	XY	XX	XY
17	17	79	86	94	90	51	43	30	34	08	06	1	0
34		165		184		94		64		14		01	
50%	50%	47.8%	52%	51%	48.9%	54.25%	45.7%	46.8%	53.1%	57.1%	42.8%	100%	Nil

Table -III. Number and percentage of female and male

A		B		C		D		E		F		G	
Below 20 years		21-25 years		26-30 years		31-35 years		36-40 years		41-45 years		46-50 years	
34		165		184		94		64		14		01	
XX	XY	XX	XY	XX	XY	XX	XY	XX	XY	XX	XY	XX	XY
17	17	79	86	94	90	51	43	30	34	08	06	1	0
50%	50%	47.8%	52%	51%	48.9%	54.25%	45.7%	46.8%	53.1%	57.1%	42.8%	100%	Nil

CONCLUSION

There was a negligible dominance of male in group B of mean age 23 years which showed 4.3% male fetal gender and in group E of mean age 38 years, which showed 6.3% male fetal gender.

Sex determination was difficult in 2.1% only because of using high resolution ultrasound equipment, and observation by two sonologists.

Overall dominance of male gender noted (0.7%) among 556 number of mothers.

Thus we concluded that there is no significance of age of mother for having male baby however mothers of age 23 and 38 appear to have higher incidence of male child by dominance of 4.3% and 6.3% respectively.

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