CHORION VILLUS SAMPLING AS A PROGNOSTIC TOOL IN THE MANAGEMENT OF HIGH RISK PREGNANCIES

PANDEY, K ● AGNIHOTRI, M ● BHAGOLIWAL, A ● SRIVASTAVA, R. K.

SUMMARY

In the present study of 112 cases, chorion villus sampling was done to detect genetic anomalies in first trimester. In 100 cases samples were taken transcervically & 12 cases transabdominally. Our sample included patients of advanced maternal age (more than 35 years) history of congenital anomaly or down syndrome in family, history of fever or drug intake. In one case (0.9%) we had sampling failure. In 76.7% cases first attempt was successful. Sampling was done at mean gestational age of 9 weeks (range 6 to 12 weeks), slight vaginal bleeding was observed in 14.3% cases & in 1.8% moderate bleeding, where 3rd attempt for sampling was required. In one case (0.9%) fetal loss (spontaneous abortion after 18 days of CVS) was observed. In transabdominal group no complications were observed. 63.4% continued pregnancy & had normal outcome, 35.7% cases had voluntary abortion. Abnormal karyotype-Trisomy 21 was observed only one case (0.7%) which belonged to advanced age group.

INTRODUCTION

Congenital malformations including genetic diseases are one of the important causes of spontaneous abortions, still births, early neonatal deaths, mental retardation and other morbidities after birth. Amniocentesis is most commonly employed technique for diagnosing genetic diseases in the fetus. But the main disadvantage of this technique is that it cannot be performed before 16 weeks of gestation. Thus fetal

Dept. of Obs. & Gyn. Dept. of Anatomy. G.S.V.M. Medical College, Kanpur.

Accepted for Publication on 31.1.1995

diagnosis of chromosomal or biochemical abnormalities is delayed till 18 weeks of gestation. If a genetic disorder is detected at this late stage, termination of pregnancy will be complicated as well as traumatic for the couple.

Chorionic villus sampling during the first trimester of pregnancy is a highly effective and reliable technique for detecting fetal disease. (Brambati, B.et al; 1987), (Pt. Persetal 1988). It is therefore, a potential alternative to genetic amniocentesis. This procedure was considered to pose significant risks to both the fetus and the mother (Mohr J. 1968). But a report by Kazy et al, 1982) has changed the scenario drastically. He described a sampling technique using Ultrasonographic guidance. Exact risk figures for complications of chorionic villus sampling are yet to be established. We report our experience of CVS in a set of 112 patients.

MATERIAL & METHODS

Total 112 women in early pregnancy (6-12 weeks) attending OPD of UISEM and other hospitals of Kanpur were included in this study. Chorion samples were analysed at department of anatomy G.S.V.M. Medical College, Kanpur. We included women in advanced age (more than 35 years) Bad obstetrical history, family H/O of down Syndrome or other Chromosomal anomaly, history of exposure to radiation, viral infection of drugs in present pregnancy. After careful clinical examination of patient certain investigations like blood grouping, Rh. antibody titre (in Rh negative patient), TORCH titre (in BOH cases) and cervical swab culture (in Vaginal infection Cases). Those cases were vaginal infection was found by cervical swab culture were not included for study. By ultrasound examination viability, site of chorion frondosum, any abnormality in gestational sac was noted. Those cases where sac was abnormal or fetus was non-viable or twin pregnancy, were not included in our study.

Under all aseptic precautions transcervical chorionic sample was taken by malleable chorion villus sampling metal cannula No. 16. Cases of fundal chorionic frondosum, or where cervical length was more, uterus was high, transabdominal route was selected. Spinal needle No. 18 was used. Tissue was collected in TC2 mircolab medium and after planting and harvesting slides were prepared. These were stained with GIEMSA stain and chromosomes were photographed and arranged in Karyotype charts.

RESULTS

CVS was performed by transcervical method in 100 cases and by trans abdominal method in 12 cases. Table No. I shows number of attempts needed for chrion biopsy. In 76.7% cases it was obtained in one attempt. 19.6% cases required second attempt whereas 3.5% of TVS needed 3rd attempt.

Table II shows various indications for sampling 18.7% in normal pregnancy, 47.3% mothers were of higher age, 9.9% of BOH, 4.9% had history of drug intake, 12.5% with history of congenital anamoly in family, 4.9% cases had history of fever, 0.9% of H/O mentaly retarded baby H/O Down syndrome was present in 2.6% cases of the sample.

Table III documents various complications after CVS. Slight vaginal bleeding

Table I

Showing number of attempts needed for chorion sampling

No. of attempts	Trans Cervical		Trans abdominal		Total	
	No.	%	No.	%	No.	%
1.	75	75	11	91.6	86	76.7
2.	21	21	1	8.4	22	19.6
3.	4	4	-	-	4	3.7
Total	100	100	12	100	112	100

Table II

Indications of CVS

Indications	Trans	Cervical	Trans	abdominal	Total	
	No.	%	No.	%	No.	%
Normal Preg.	16	16.0	5	41.6	21	18.7
Advanced mat. age	47	47.0	6	50.0	53	47.4
BOH	10	10.0	-	-	10	9.9
H/O Drug Intake in 1st trimester	5	5.0	-	-	5	4.9
H/O fever in 1st treimester	5	5.0	-	-	5	4.9
H/O Mentally retareded	1	1.0	-	-	1	0.9
H/O Down Syn.	3	3.0	-	-	3	2.6
H/O Cong. anamoly in family.	13	13.0	1	8.4	14	12.5

Table III

Showing complications following CVS

Complications	Trans cervical		Trans abdominal	
	No.	%	No.	%
Vaginal bleeding	18	16.1	-	-
Slight	16	14.3	-	-
Moderate	2	1.8	-	-
Retroplacental haematoma	-	-	-	-
Infection	-	-	-	-
Spontaneous abortion	1	0.9	-	-
Preterm labour	-	-	-	-
Still Birth	-	-	-	-

Table IV

Showing Pregnancy outcome

Observations	Trans	Cervical	Trans	abdominal	Total	
	No.	%	No.	%	No.	%
Voluntary abortion	35	35.0	5	41.6	40	35.7
Pregnancy	64	64.0	7	58.3	70	63.4
Spont. Abortion	1	1.0	-	-	1	0.9

Table V

Showing Cytogenetic Analysis

Cytogenetic analysis prone CVS	No. of Cases	%
46 XX	65	58.3
46 XY	46	41.0
Trisomy 21	1	0.7
Total	112	100.00

occurred in 14.3%, 1.8% cases reported moderate bleeding. Fetal loss occurred in 1 case (0.9%).

Table IV shows pregnancy outcome. 35.7% of cases had termination of pregnancy as they had planned. 63.4% of cases continued pregnancy, one case (0.9%) had spontaneous abortion.

Table V: cytogenetic analysis of various samples showed one case of Trisomy 21 (0.7%). Rest were normal.

DISCUSSION

The mean age of the patients was 32.4 years. Median parity was 2. Mean gestational age at which chorion biopsies were taken was 9.0 wks., range being 6 - 12 weeks. Out of 112 cases in one case (0.9%) we had sampling failure, world data on CVS in 1991 reported 1.6% failure & Chakravarti, A. (1985) had 1.5% failure.

We could obtain chorion villi in first attempt in 76.7% cases, Green et al 1988 and Pijpers, et. al, (1988) were also successful in first attempt in little more than 80% cases.

Among the various group of cases which were included for study 47% belonged to advanced age group (35 years or more). Greater number of advanced maternal age cases were included because there is an increased risk of cytogenetic abnormality in them Green, et al, (1988) and Elias, et. al. (1985) had 90% of the patients close to or greater than 35 years of age in their study.

As far as the complications due to CVS are concerned only one case (0.9%) had spontaneous abortion after 18 days. CVS foetal registry Jan. 1991 & Chakravarti. A, (1985) reports fetal loss 2%. 14.3% cases reported minor bleeding lasting for 2 - 5 days and only 2 cases (1.8%) in which three attempts were done, had moderate bleeding but it was successfully managed. Green et. al. (1988) observed small to moderate bleeding in most of cases but no patient had major bleeding.

Follow up sonograms after 2 weeks & 4 weeks showed no signs of adverse fetal

development except one case in which cardiac activity was found to be absent on Ist sonographic examination. She later on aborted spontaneously. 63.4% cases continued up to term and had normal outcome.

On cytogenetic analysis of CVS samples we observed abnormality only in one case (0.7%) who had Trisomy-21. This lady was of 37 years of age. Green et al, (1988) observed 2.9% cases having cytogenetic abnormalities.

CONCLUSION

Chorion villus sampling offers significant advantage over amniocentesis as a method of prenatal diagnosis. Our study confirms the view that this is a relatively safe and reliable method. The risks are similar to amniocentesis. Hence it can be developed as safe and reliable method of detecting genetic abnormality between 6 - 12 weeks of gestation.

REFERENCES

1. *Brambati B, 01 drini A, Ferrazii E, Lanzani A, Prenat. Diagn. 7 :157 and 8,607, 1987.*
2. *Chakravarti. A and Purandare H.M., World Congress of obs. Gynae, Berlin. 1985.*
3. *Elias, S., Simpson J. L. Marin AO, : Am. J. Obs. & Gynec 152:204 1985.*
4. *Green JE, Dorfmann A, Jones SL, et al, obstet & Gynec 71: 208 1988.*
5. *Kazy Z, Rozoosky IS, Bakharev. VA, Prenat. Diagn. 2:1413 1982.*
6. *Mohr, J, Acta Pathol Microbiol. Scand 73 : 73, 1968.*
7. *Pijpers L, Jahoda MGJ, Reuss A, Weadimiroff JW, Sachs ES, Brit Med. J, 7: 297, 1988.*