ULTRASOUND - A DIAGNOSTIC AID IN EVALUATION OF PATIENTS WITH HIGH MATERNAL-SERUM-ALPHA-FETOPROTEIN

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SUMMARY

Level II Ultrasound scan done in 27 patients with raised Maternal- Serum-Alpha-Feto-Protein (MSAFP) At 14-18 weeks pregnancy diagnosed congenital abnormality in 12 cases (anencephaly-2, hydrocephalus-2, spina bifida-4, hydronephrosis- 2 esophageal atresia-1 and immune hydrops fetalis 1 case). Raised MSAFP was associated with factors like abortion-1, preterm labour-1, Rh iso-immunisation-2, Severe pregnancy induced hypertension-1, Rubella infection-1, severe intra-uterine growth retardation-1 and abdominal pregnancy-1 case.

Ultrasound is a useful diagnostic aid in evaluation of pregnant patients with raised MSAFP for congenital abnormalities and pregnancy complications.

INTRODUCTION

Maternal Serum Alpha Feto Protein in pregnancy is a valuable tool not only for screening neural tube defects, but also for the identification of high risk pregnancies. MSAFP is a human protein produced initially by the yolk sac and subsequently by the fetal liver, and is detected in maternal serum by 12-14 weeks gestation, normally increasing steadily throughout pregnancy to 30-32 weeks of gestation.

MSAFP Screening can be done with reasonable reliability between 15-21 weeks, at which time, levels normally rise by 15% per week (Burton, 1988).

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MATERIAL & METHODS

Over a period of 20 months, 27 patients referred to the Fetal Medicine Clinic with raised MSAFP between 14-18 weeks pregnancy were screened for congenital malformation by detailed Level II Ultra-Sound Scans.

The cases were thoroughly examined and history taken for any other significant factors. Patients with abnormalities incompatible with life were advised medical termination of pregnancy. The rest of the cases were followed up and serial u/s scans were done at 24, 32 and 36 weeks of pregnancy. The baby and placenta was thoroughly examined after delivery.

RESULTS

Level II ultrasound examination; diagnosed

fetal congenital abnormality in 12 cases (44%). These and other associated u/s findings are shown in table I.

Table - I

U/s findings are shown in table I

	Ultrasound finding	No. of cases
1.	Anencephaly	2
2.	Hydrocephalus	2
3.	Spina-bifida	4
4.	Hydro-nephrosis	2
5.	Esophageal atresia	1
6.	Hydrops fetalis	1
7.	Twin pregnancy	2
8.	Severe I.U.G.R.	1
9.	Multiple echoes in placenta	1
	Total	16

In 11 cases no significant u/s findings were noted. Raised MSAFP was associated with the following additional factors in 10 cases, as shown in Table II.

Table - II

Factors associated with Raised MSAFP

	Factor	No. of cases
1.	Inevitable Abortion	1
2.	Preterm Labour	1
3.	Rh iso-immunisation	2
4.	Severe pregnancy induced hypertension	1
5.	Rubella infection	1
6.	Grand Mal Epilepsy	1
7.	Previous 3 anencephalic babies (Prev. Toxoplasma + ve, CMV +)	1
8.	Abdominal pregnancy	1
9.	Large for date baby	1
	Total	10

DISCUSSION

MSAFP is a valuable screening test which detects 80-85% of open neural tube defects, (Brock, 1973). The next step in the evaluation of patients with raised MSAFP on two occasions is ultrasound, for correct estimation of gestational age, for congenital abnormality and prior to amniocentesis for Amniotic fluid AFP.

Twin pregnancies are associated in 40% of the cases with MSAFP levels greater than 2.5 times multiples of mean (MOM). Fetal congenital defects like congenital nephrosis, ventral wall defects, placental anomalies, or adverse pregnancy outcome are significantly increased when MSAFP levels are high (Burton, 1981, Ghose, 1982).

Unexplained elevation of MSAFP have been associated with an increased risk of spontaneous abortion, still-birth, prematurity, intra-uterine-growth retardation and neo-natal death, where Amniotic-AFP may be normal (Wald, 1980; Evans, 1984) Careful obstetric follow up is necessary in this group of patients.

On rare occasions, elevation MSAFP levels may be of maternal rather than fetal origin such as liver disease and certain malignancies.

Raised MSAFP is a useful, cost-effective screening test for neural tube defects and other complications of pregnancy.

When combined with detailed ultrasound evaluation the diagnostic accuracy is increased, for identification of fetal congenital abnormality and high risk pregnancy.

REFERENCES

1. *Brock D.J.H., Bolton A.E., Managhan J.M., Lancet, 2 : 293, 1973.*
2. *Burton B.K., Clin. Obstet Gynec., 31, 293, 1988.*
3. *Evans J, Stokes I.M., Brit. Med. J., 288, 1494, 1984.*
4. *Ghosh A, Woo J.S.K., Rawlinson H.A., Ferguson-Smith MA Brit. J. Obstet Gynec., 89, 817, 1982.*
5. *Wald N.J., Cuckle H.S., Boreham J., Turnbull A.C., Brit. J. Obstet Gynec., 87 : 850, 1980.*