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THE ROLE OF INTRAVENOUS AMINO ACID INFUSION IN OLIGOHYDRAMNIOS

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ABSTRACT

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Oligohydramnios means the fetus is in a compromised condition. *Ante partum* amniotic fluid index (A.F.I.) assessment is one of the reliable, good predictor and standard technique for assessment of fetal well-being in antenatal period. In the present study 25 cases of Oligohydramnios in the third trimester were given intravenous amino acid in 1000cc of 10% fructodex drip on 1st day and the amino acid infusion drip in 500 ml of 10% fructodex daily till 6 days. After that biweekly till patient deliver or till term. There were 4 cases of severe Oligohydramnios and 21 cases of moderate Oligohydramnios at the time of their first visit. After amino acid infusion therapy, on repeat ultrasonography, 9 (36%) cases patients with moderate Oligohydramnios had improved amniotic fluid index (AFI) to normal whereas two patients with severe Oligohydramnios had improved A.F.I. to moderate Oligohydramnios and remaining 12 and two patients of moderate and severe Oligohydramnios group patients did not show any changes in A.F.I. Maximum cases delivered vaginally.

INTRODUCTION: Pregnancy is a unique experience in every woman's life. The thought of a growing fetus with adequate amniotic fluid volume (according to gestational age) in the mother's womb, indeed is nature's way of expressing the attributes of motherhood, so adequate amniotic fluid volume is essential for the normal growth and well-being of the fetus.

Oligohydramnios means that the fetus is in a compromised condition. Oligohydramnios is quite often associated with abnormal fetal outcomes such as IUGR, fetal anomaly, malpresentation, post-maturity syndrome and fetal distress in labor, even a moderate reduction in amniotic fluid volume is associated with abnormal FHR, meconium stained liquor which often requires cesarean section and results in perinatal morbidity and mortality.

Ante partum amniotic fluid index assessment is one of the reliable, inexpensive, good predictor and standard technique for assessment of fetal well-being in *ante partum* period.

As it is shown in various studies that patients with severe Oligohydramnios (AFI < 5) had 59% chance of persistent Oligohydramnios and patient with borderline Oligohydramnios (AFI 5 – 8), had 5% chance of developing severe Oligohydramnios within next 4 days¹.



A decreased amniotic fluid volume is frequently one of the first clues of an underlying fetal abnormality of maternal disease state. Usually the degree of Oligohydramnios is proportional to the severity of placental hypo perfusion and IUGR. The most likely cause of Oligohydramnios in IUGR babies is decreased urinary output ².

When significant impairment of placental perfusion occurs, the fetus becomes hypoxic and autonomic nervous reflexes that consequently get activated, results in the preferential shunting of the blood from the splanchnic circulation to the brain and heart and as a result of decreased pulmonary and renal perfusion, the amniotic fluid decreases ³.

Over the years many different medical and interventional methods have been undertaken in the interest of unborn baby. In the present study 25 cases of Oligohydramnios in third trimester, were given intravenous amino-acid infusion and conditional of the neonate along with associated complications were recorded.

MATERIAL AND METHODS: The present study was conducted in the Department of Obstetrics and Gynecology, R.N.T. Medical college, Udaipur in Panna Dhai Mahila Chikitsalaya, Udaipur. The study group comprised of 25 clinically and sonographically proven cases of Oligohydramnios in third trimester attending antenatal clinic and those admitted in wards and clean labour room at random.

The criteria for inclusion were as follows-

1. Singleton pregnancy
2. Four quadrant estimation of AFI. The fluid is decreased if AFI is < 10 cm and markedly decreased if AFI is < 5 cm.
3. Gestational age more than 28 weeks and less than 40 weeks of gestation
4. Intact membranes

Exclusion criteria:

1. Multifoetal gestation
2. Polyhydramnios

3. Ruptured membranes
4. Associated fetal anomalies
5. patients having major respiratory, cardiovascular and abdominal pathology

After taking detailed history including age, parity, gestational age, history of present illness, past menstrual history, last menstrual period, antenatal care during pregnancy; past obstetric history, any pregnancy associated complication, past or present history of any infection or medical disorders, personal and family history were recorded on Performa.

Then thorough general systemic and obstetric examination including abdominal girth, fundal height and maternal weight recorded weekly or fortnightly. Fetal movement and FHR record is maintained.

Investigations of blood i.e. Hb, TLC, DLC, VDRL, TOXO, ESR, Urea, sugar, uric acid, creatinine, grouping and typing along with urine routine and microscopic examination were done. After initial ultrasonography, patients included in the study group were subjected to repeat sonography. The AFI, was determined with a B-mode real time scanner with linear accelerator operated at 3.5 MHz

The study group patients were given intravenous amino acid infusion in 1000 C.C. of 10% Fructodex drip on first day and then amino acid infusion drip in 500 ml Of 10% fructodex daily till 6 days. After that biweekly till patients deliver or till term. Oral iron, calcium and multi vitamins were also given. Patients were followed up till their delivery.

Pregnancy outcome was assessed with respect to;

- Incidence of meconium stained liquor
- Intrapartum fetal distress
- Mode of delivery
- Indication of LSCS was noted
- Fetal outcome was studied with regards to birth weight.

Apgar score at one and five minutes and any other neonatal complication intrapartum or postpartum during stay in hospital and condition at the time of discharge.

Observations: Patients were distributed according to the amniotic fluid index on entry and at time of delivery as those with moderate Oligohydramnios (AFI 5.1 – 10 cm) and those with severe Oligohydramnios (AFI < 5 cm).

Table 1 shows that there were 4 cases of severe Oligohydramnios and 21 cases of moderate Oligohydramnios at time of 1st visit. On repeat USG after amino acid infusion 9 (36 %) patient with moderate Oligohydramnios had improved AFI normal, whereas 2 patients with severe Oligohydramnios had improved (AFI) to moderate Oligohydramnios.

Table 2 shows that 20% patients had LSCS, while 80% delivered vaginally, among which, 24% delivered as SPND and 48% delivered vaginally after induction and acceleration by syntocin and misoprostal.

Reviewing the outcome of pregnancy in relation to amniotic fluid volume, those patients who had AFI

improved to normal (9 patients), 8 delivered at term and one delivered as preterm vaginally.

Patients with moderate oligohydramnios, one delivered as assisted breech delivery, 10 delivered vaginally and 3 by caesarean section out of which, one for PIH and 2 For IUGR.

Those left with severe oligohydramnios had caesarean section, one for IUD previous CS with failed induction and other for PIH.

Table 3 shows that study group 92% babies were born alive, out of which 2 (8%) babies expired after birth in nursery, 1 because of hypoglycemia and 1 because of severe birth asphyxia due to breech delivery and 2 (8%) were still born due to IUD.

Table 4 show that among 2 babies of severe oligohydramnios, 1 had low Apgar score and both were IUGR (100%), 9 (64.2%) babies of moderate Oligohydramnios had weight \geq 2.5 kg and 5 (35.7%) were IUGR. 4 babies with improved > 10 cm had normal weight and 5 (55.5%) were IUGR, had good Apgar scores. So overall, 48% babies IUGR even after intravenous amino acid infusion.

TABLE 1: PATIENT'S DISTRIBUTION ACCORDING TO AFI AND 1ST VISIT AND AT TIME OF DELIVERY

| AFI | On 1 st visit | At time of delivery |
|------------------------------------|--------------------------|---------------------|
| Severe Oligohydramnios \leq 5 cm | 4 (16%) | 2 (8 %) |
| Moderate Oligohydramnios 5.1-10cm | 21(84 %) | 14 (56 %) |
| Normal > 10 cm | - | 9 (36 %) |
| Total No. of patients | 25 (100 %) | (100%) |

TABLE 2: RELATIONSHIP BETWEEN AFI AND MODE OF DELIVERY

| Pregnancy outcome | AFI \leq 5 cm (2) | 5.1- 10 cm (14) | > 10 cm (9) |
|--------------------------------------|---------------------|-----------------|-------------|
| Preterm del. 1 (4%) | - | - | .1 |
| Assisted breech delivery 1 (4%) | - | 1 | - |
| Cesarean section 5 (20%) indications | - | - | - |
| IUD | 1 | - | - |
| PIH | 1 | 1 | - |
| IUGR | - | 2 | - |
| Vaginal Delivery 19 (76 %) | - | 10 | 9 |

TABLE 3: DISTRIBUTION OF PATIENTS ACCORDING TO FETAL OUTCOME (DEAD/LIVE) AT BIRTH

| Foetal outcome at birth | No. of babies | % of babies |
|-------------------------|---------------|-------------|
| Alive | 23 | 92% |
| Dead | 2 | 8% |
| Total no. of babies | 25 | 100% |

TABLE 4: RELATIONSHIP BETWEEN AFI AND FOETAL OUTCOME

| AFI after amino acid infusion | IUGR | Weight of baby at birth >2.5 kg | Weight of baby at birth < 2.5 kg | Apgar score < 5 at time |
|-------------------------------|-----------|------------------------------------|-------------------------------------|-------------------------|
| ≤ 5cm (2) 8% | 2 (100%) | - | 2 (100%) | 1 |
| 5.1- 10 cm (14) 56% | 5 (35.7%) | 9(64.2%) | 5 (35.7%) | 2 |
| > 10 cm (9) 36% | 5 (55.5%) | 4 (44.44%) | 5 (55.56%) | - |
| Total no. of babies 25 (100%) | 12 (48%) | 13 (52%) | 12 (48 %) | 3 |

DISCUSSION: Oligohydramnios is late sign of fetal malnutrition. Inadequate nutrition is the second important cause of IUGR and associated complication⁴. *Ante partum* fetal surveillance by assessment of amniotic fluid has become an integral component in the management of amniotic fluid. Improvement in maternal nutritional status and weight gain in pregnancy is associated with better pregnancy outcomes. Intravenous infusion of large amount of glucose and many amino acids to the mother have been tried. Hyper alimentation in mothers carrying growth retarded fetus by intravenous route, 10% fructodex, amino acid solution, vitamins are usually given⁵.

Improvement in AFI by intravenous amino acid infusion appears to act through improved maternal nutritional status, which could not have been achieved by diet because of non-compliance and socioeconomic factors.

CONCLUSION: Although after infusion therapy perinatal outcome was significantly poor in severe Oligohydramnios group (AFI < 5 cm) than those with

normal group. Perinatal outcome was good in moderate Oligohydramnios group (AFI 5.1 – 10 cm).

From the above study, it is suggested that for idiopathic Oligohydramnios intravenous amino acid infusion may prove useful in reducing maternal morbidity and perinatal mortality and morbidity and improving pregnancy outcome in developing countries.

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