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ROLE OF ANTEPARTUM TRANSABDOMINAL AMNIOINFUSION IN OLIGOHYDRAMNIOS IN PERINATAL MORTALITY AND MORBIDITY-A PRSOPECTIVE, COMPARATIVE HOSPITAL BASED STUDY

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ABSTRACT

Background: To determine the usefulness of antepartum transabdominal amnioinfusion in oligohydramnios and reduction in perinatal mortality and morbidity. **Methods:** A prospective, hospital-based study of 260 subjects. 130 pregnant women subjected to transabdominal infusion and 130 pregnant females with some gestational age were studied as control group, diagnosed as cases of oligohydramnious on the basis of clinical examination and ultrasonography. **Results:** Mean gestational age in the studied subjects and controls was 29.98 and 30.16 years, respectively. Among the study group, mean amniotic fluid index (AFI) was 4.01cm and 12.49cm before and after the amnioinfusion, respectively, carrying high statistical significance, spontaneous labour was more pronounced in the study group compared to controls (36.92% vs. 16.92%). The neonatal deaths were for lesser (3.07%) in the study group compared to 18.46% in the control group, carrying very high statistical significance (p=0.007526). **Conclusion:** Antepartum transabdominal amnioinfusion in oligohydramnious increases patient outcome and deeds to definite reduction in perinatal mortality, demanding further research among large study samples.

KEYWORDS: Amniotic fluid, amniotic fluid index, transabdominal amniocentesis, oligohydramnios, pregnancy.

INTRODUCTION

Amniotic fluid surrounds fetus in the intrauterine life providing a protected, low-resistance space suitable for fetal movement, growth and development. Disturbance between its production and consumption leads to oligo-or polyhydramniios, both of which lead to poor perinatal outcome.[1] Oligohydramnios complicates 1% to 5% of term pregnancies, and is a serious condition leading to perinatal outcome. The overall incidence is 3.9% of all pregnancies as per the published literature.[2] Oligohydramnios is technically defined as amniotic fluid index (AFI) of less than fifth percentile. Normal amniotic fluid index is between 8.1 to 20cm, whereas borderline oligohydramnios is defined as amniotic fluid index of between 5.1 and 8cm.[3,4] Manning and co-workers defined oligohydramnios with measurement of largest pocket on ultrasound in its broadest diameter of less than 1cm. they revised the criteria to a single pocket measuring 2cm in both vertical and horizontal planes.[5] Causes of oligohydramnios could be maternal, placental and fetal in origin.[6,7] and various fetal anomalies include intrauterine growth retardation (IUGR), ruptured membranes, and intrauterine death. Currently used ultrasound techniques include subjective assessment followed by maximum vertical pocket/single deepest vertical pocket, amniotic fluid index, and two-diameter amniotic fluid pocket.[8] Apart from conservative measures, the therapeutic intervensions include amniotic fluid infusion, that appears to act through improvement in the maternal nutritional status. It is a useful procedure to reduce fetal distress, and to improve fetal outcome.[9,10,11]

Our study was conducted with the aim of evaluating the effect of antepartum transabdominal infusion on amniotic fluid volume, and reduction in the frequency of complications.

MATERIALS AND METHODS

This was a randomized, controlled study conducted by the Postgraduate Department of Obstetrics and Gynaecology at the Government Medical College, Srinagar over a period of one and half year between 2016-2017, after obtaining clearance from the Institutional Ethical Committee. Pregnant women who were admitted to the hospital as diagnosed cases of oligohydramnnios on the basis of clinical suspicion (like small symphysio-fundal height, prominence of fetal

parts, reduced amount of fluid with fetal malpresentation), ultrasound documented oligohydramnios with AFI ≤5cm, and sample size of 260 were recruited for the study after obtaining valid consent in every subject. Subjects with complicated obstetrical, medical and surgical disorders were excluded from the study. Randomization and allocation of groups was done by using Opaque sealed envelope containing random selection code. 130 pregnant women were selected for ultrasonography-guided transabdominal amnioinfusion and 130 pregnant women were selected for receiving expectant management. In all pregnant recruited for this study, a baseline ultrasonographic scan was performed. Color Doppler study was done for fetal biometry, morphological evaluation and for amniotic fluid assessment using AFI with the four-quadrant technique[12]. A cardiotocography was done in every study subject and gestational age was confirmed from menstrual history, clinical examination and ultrasonography. All the subjects were examined to exclude a diagnosis of premature rupture of membranes on the basis of history and on speculum examination, observing pooling of amniotic fluid in the vagina. Anti-D prophyylaxis was administered in all Rh-negative pregnant women. Under all aseptic precautions, local anesthesia (5-10ml of 2% xylocaine) was given. A spinal needle of 23 gauge was introduced into the pocket carefully directed into the amniotic cavity, avoiding to fetus, placenta and umbilical cord. Pre-warmed normal saline (0.9% NaCl) or ringer lactate solution was infused via 50ml syringe connected to the spinal needle. Fluid was given at the rate of 25 to 30ml/min[13], and the infusion was continued till a maximum amniotic fluid pocket of 2cm was reached or amniotic fluid index exceeded 5cms for a particular gestational age, or medium amniotic fluid diameter was 3cm[14,15]. Continuous ultrasound monitoring of fluid was done in every subject. AFI was determined at the end of procedure and a detailed ultrasound was repeated to check for the fetal wellbeing. Amniocentesis was deemed to be successful if the median deepest pocket of fluid was >2cm after 48 hours of procedure and was maintained during the latency period. All subjects received antibiotic therapy and tocolytics for 5 days following the procedure. The subjects with successful amniocentesis were followed up weekly on the outpatient basis were the AFI was re-measured to assess the need for further amniocentesis. Ultrasound monitoring of fluid was done in every subject.

Statistical Analysis: A comparative evaluation of the data was performed by using student ‘t’ test and chi-square test for metric data and non-metric data, respectively. P values of < 0.05 were considered statistically significant.

RESULTS

This prospective, hospital based study was conducted on a total of 260 pregnant women, 130 pregnant women with gestational age of 28-34 weeks with AFI < 5cm in whom transabdominal amnioinfusion was done, and comparison was done with 130 pregnant women of same gestational age and AFI who were managed conservatively. These two groups were similar with regard to antepartum variables i.e. maternal age, gravidity, parity and gestational age. Mean age for the study group was 26.3 years, and that for control group was 26.5 years, with no statistical significance (p 0.975). both groups were also statistically compared with p value of 0.97, 0.45 and 0.814 for gravidity, parity and abortion, respectively. Mean gestational age in the study group was 29.98 weeks and that in the control group was 30.16 which was statistically insignificant. Both the groups were statistically compared for amniotic fluid index and were found to be statistically insignificant (Table 1). Post-infusion AFI was statistically highly significant in the study group (Table 2). The mean AFI before and after intervention was 4.01cm and 12.49cm, respectively. The difference was statistically significant. Overall, 66 patients (50.77%) received single infusion, 46 (35.38%) patients received two and 18 (13.84%) patients received three amnioinfusions. On monitoring of the fetal heart rate, 18 (13.84%) patients showed late deceleration and 10 (5.69%) showed variable deceleration, compared to 30 (23.07%) and 60 (46.15%) in the control group. This comparison was found to be statistically significant (p 0.02055, □2 3.537, df 1). Spontaneous labour was observed in 48 (36.92%) in the study group compared to 22 (16.92%) patients in the control group. This was also statistically highly significant (p 0.01765). Vaginal delivery was fairly more in the study group compared to controls (Table 3), with high statistical significance. There were only 36 (27.69%) preterm deliveries in the study group compared to 90 (69.23%) deliveries in the control group, carrying very high statistical significance (p 0.0006697). The newborns in the study subjects carried more weight compared to those of controls, again showing high statistical significance (Table 4). Admission to the neonatal ICU was far less in the offsprings of study subjects compared to controls (21.53% vs. 49.23%), carrying very high statistical significance (p 0-.007) and neonatal deaths were far less (3.07%) in the study group compared to 18.46% in the control group, showing very high statistical significance (p 0.007526).

Table 1: Distribution of patients according to amniotic fluid index (cm).

AFI (cms)	Study Group		Control Group	
	No.	%	No.	%
2.1-3.0	10	7.69	6	4.62
3.1-4	50	38.46	44	33.85
4.1-5	70	53.85	80	61.54

$\chi 2=1.0248$, p value = 0.599.

Table 2: Distribution of amniotic fluid index (cm) post infusion in study group.

AFI	Study Group	Control Group
9.0-11.0	40	30.77
12.0-14.0	72	55.38
15.0-17.0	18	13.85

Table 3: Distribution of Mode of Delivery.

Mode of Delivery	Study Group		Control Group	
	No.	%	No.	%
Vaginal	80	61.53	32	24.61
LSCS	40	30.76	78	60.0
Instrumental	10	7.69	20	15.38

$\chi 2=18.071$, p value = 0.0001191

Table 4: Distribution of Birth Weight of Newborns (kg).

Birth weight (kg)	Study Group		Control Group	
	No.	%	No.	%
1.5-2	14	10.76	42	32.30
2.1-2.5	36	27.69	56	43.07
2.6-3	64	49.23	30	23.07
3.1-3.5	16	12.30	02	1.53

$\chi 2=20.7673$, p value = 0.0001177

DISCUSSION

The mean age in our study group was 26.3 and 26.5 years in the study group and controls, respectively and, this is comparable to previous studies.[16,17,18] Majority of our pregnant women were primigravida in both study control group, and the observations of obstetric index like gravidity, parity and number of previous abortions were similar to the study of Chhabre and co-workers.[19] Both groups in our study carried 28-34 weeks of gestation, in a similar fashion was reported by previous studies.[20,21,22,23] Mean AFI in our study is also comparable to previously conducted studies of Anshuja.[20] and Kini.[22] Fetal heart rate patterns were significantly higher among the control group in our study. Patrizia and co-workers also observed similar findings.[24] In our study, neonatal deaths were far less among the study group compared to controls. Similarly, previous researchers observed lower mortality among neonates of the subjects receiving amnioinfusions.[20,25,26]

Thus in our study involving antepartum transabdominal infusions, we found significant reduction in fetal distress, need for operative intervention and neonatal mortality. However, large study samples are recommended in future to classify our findings in the interest of improving patient care.

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