

Role of L-Arginine in Borderline Oligohydramnios

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Received: 01-06-2021 / Revised: 04-07-2021 / Accepted: 29-08-2021

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Conflict of interest: Nil

Abstract

Aim and objective: To study the effect of L-arginine in optimizing fetal outcome in case of borderline oligohydramnios(BO). **Material and Method:** A retrospective study was conducted in NSMCH Bihta in Dept of Obs & Gynae between June 2019 to March 2021 consisting of 100 antenatal patients diagnosed with BO- AFI < 8cm remote from term. Patients were evaluated for all antenatal risk factors and were started on L-arginine sachets (1 sachet twice daily). The treatment was continued till an adequate improvement in liquor was noted. However, patients were considered for delivery if the liquor remained <5. Further, mean increase in AFI, intervention delivery interval and neonatal outcome were studied. **Results:** The mean gestational age at the time of recruitment was 32.4 weeks. The mean AFI noted was 5.6 cm. These patients were delivered at a mean of 35.5 weeks and thus pregnancy could be prolonged by 3.1 weeks. The mean AFI at the end of therapeutic intervention was 8.8 cm and thus an AFI increase of 3.2 cm could be obtained. Significant improvement in liquor volume was obtained in these patients after supplementation with L-arginine sachets. There was no significant neonatal morbidity in these patients. **Discussion and Conclusion:** L-arginine supplementation is promising in improving volume of amniotic fluid in case of BO and prolonging pregnancy by a mean of 3.1 weeks, allowing better fetal maturation and neonatal outcome.

Keywords: L- arginine, Bordeline Oligohydramnios (BO), amniotic fluid index (AFI).

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Aim and objective:

Amniotic fluid (AF) surrounds the fetus after first few weeks of gestation which serves to protect the fetus and umbilical cord from compression. Oligohydramnios is decreased amount of AF affecting 3-5% of pregnancies and is associated with placental insufficiency, impaired lung development in fetus and fetal growth restriction. Long term complications are cord compression and variation in fetal heart rate during labor and increased chance of operative deliveries.

Normally AF increases about a litre between 32 and 34 weeks of gestation, but afterwards it decreases till term to around 400 ml. The amount of AF is most commonly evaluated by ultrasound using Amniotic fluid index (AFI) or single largest vertical pocket (SLVP). An AFI of 8 cm and above is considered normal, between 5-8 cm is borderline oligohydramnios (BO) and <5cm is oligohydramnios.

Different medical interventional methods have been tried to treat oligohydramnios. This study was done to find out the effect of

L-arginine, a semi-essential amino acid and sole endogenous precursor of nitric oxide, on AFI, mode of delivery and fetal outcome.

Material and Method:

A retrospective study was conducted in Dept of Obs & Gynae, NSMCH Bihta between June 2019 to March 2021 consisting of 100 patients diagnosed with BO by ultrasound (AFI<8 Cm). Inclusion criteria were -29 to 36 weeks gestational age in singleton pregnancies with or without complications and initial AFI between 4 to 8 cm in presence of intact membranes. Exclusion criteria were smoking and chronic illness like renal disease, congenital heart disease, diabetes mellitus, fetal malformations, severe fetal

growth retardation and preterm premature rupture of membranes.

The amniotic fluid volume was calculated with 4 quadrant technique. The AFI was calculated by summing up the maximum vertical pocket fluid pockets in cm in each of the 4 quadrants. Patients were prescribed L-arginine sachets twice daily in oral forms. Serial ultrasound monitoring was performed and patients were followed up till delivery. Effect of L-arginine on amniotic fluid volume and intrauterine growth was analysed. The treatment was continued till the liquor improved significantly, Patients were considered for delivery if the liquor remained <5 irrespective of gestational age.

Table 1:

Parity	i Primigravida	75
	ii Multigravida	25
Mean gestational age	i At recruitment	32.4 weeks
	ii At delivery	35.5 weeks
Mean AFI	i Before intervention	5.6 cm
	ii After intervention	8.8cm

Table 2:

Complications	Number
1.Mild FGR(fetal growth retardation)	35
2.Threatened preterm	20
3.Pregnancy induced hypertension-mild	20
4.Anemia	5
5.Previous LSCS	10
6.Hypothyroidism	5
7.No complications	5

Results:

1.Among the 100 patients, most of them (75%) were primigravida. The detection of BO was during their 3rd trimester between 29-36 weeks of gestation.

2.The overall increase in liquor was 3.2 cm (pre-treatment AFI-5.6 cm and post-treatment AFI- 8.8 cm on averaging)

3.20 patients had preterm delivery.

4. Caesarean delivery was needed in 72%. Main indication was fetal distress as fetuses with less amount of liquor are likely to experience cord compression and variable deceleration.

5.Average gestational age at delivery was 35.5 weeks and 3.1 week (35.5 week-32.4 week) of prolongation period was noted with the therapy.

6.Mean neonatal birth weight was 2.76 kg.

7.No perinatal death was recorded. Though 11 neonates had 5 min APGAR score between 4 and 6, all recovered completely.

Discussion and Conclusion:

Amniotic fluid has major role in development of fetus. Borderline amniotic fluid in our study lies in the range of AFI between 5-8 cm which is also in accordance with Cochrane review of Nabhan and Abdelmoula[1]. L-arginine is a semi-essential amino acid acting as a substrate for synthesis of Nitric oxide[2]. It is involved in the regulation of blood flow in vascular beds[3] and is an important regulator of placental perfusion[4]. It causes vasodilatation and shows aggregative effect on platelets. This mechanism increases the volume and viscosity of blood in the feto-maternal circulation[5].

Delivery of patients with gestational age less than 34 weeks with oligohydramnios is a challenging situation. To avoid prematurity and its associated

complications, oral L-arginine can be used as a cheap and feasible method.

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