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CLINICAL ARTICLE

Antepartum transabdominal amnioinfusion

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Abstract

Objective: To determine the usefulness of antepartum transabdominal amnioinfusion (APTA) in reducing perinatal morbidity and mortality due to oligohydramnios. *Methods:* In this case–control study of 100 pregnant women with oligohydramnios, 50 received APTA and 50 were treated conservatively. These controls were matched for age, parity, and pregnancy duration with the case patients. *Results:* There was a mean 4.02-cm increase in amniotic fluid index (AFI) after amnioinfusion. Only 18% of case patients required cesarean sections vs. 46% of controls. The perinatal mortality rate was 18% among controls and 4% among case patients, and the difference was significant. *Conclusion:* Antepartum amnioinfusion is a useful procedure to reduce complications resulting from decreased intra-amniotic volume. It is especially useful in preterm pregnancies, where the procedure allows for a better perinatal outcome by prolonging the duration of pregnancy.

1. Introduction

Oligohydramnios, or reduced amniotic fluid volume, leads to a large number of stillbirths from intrauterine asphyxia. Oligohydramnios is said to be present if a single reading of the amniotic fluid index (AFI) is less than 5 cm or 3 readings are less than 8 cm [1]. Oligohydramnios complicates 4% to 5.5% of all pregnancies [2,3], and can lead to antepartum and intrapartum fetal death, compression-related limb deformities, and pulmonary hypoplasia. Women with oligohydramnios frequently undergo cesarean sections (CS) and induced labor before term, which results in low birth weight. However, oligohydramnios can be managed by amnioinfusion. The amniotic fluid volume is artificially increased by injecting normal saline or Ringer lactate solutions. Infusing 250 mL of fluid is believed to increase the AFI by 4 cm [4,5].

This study was undertaken to assess the usefulness of antepartum transabdominal amnioinfusion (APTA) as a therapeutic modality for the reduction of fetal morbidity and mortality, as well as the need for operative delivery in cases of oligohydramnios.

2. Materials and methods

In this case–control study of 100 pregnant women with oligohydramnios, 50 received APTA and 50 controls were treated conservatively. Case patients and controls were matched for age, parity, and pregnancy duration (Table 1).

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Table 1 Distribution of patients according to pregnancy duration (PD) and amniotic fluid index (AFI) [a]

Variables	Case patient group	Control group	Total
PD 28–30 weeks			
AFI < 3	2 (4)	1 (2)	3
AFI 3–5	1 (2)	2 (4)	3
AFI 6–8	1 (2)	1 (2)	2
PD 31–33 weeks			
AFI < 3	0	2 (4)	2
AFI 3–5	7 (14)	5 (10)	12
AFI 6–8	4 (8)	4 (8)	8
PD 34–37 weeks			
AFI < 3	3 (6)	3 (6)	6
AFI 3–5	14 (28)	15 (30)	29
AFI 6–8	8 (16)	7 (14)	15
PD > 37 to 40 weeks			
AFI < 3	2 (4)	2 (4)	4
AFI 3–5	4 (8)	3 (6)	7
AFI 6–8	4 (8)	5 (10)	9
Total	50	50	100

[a] Values are given as number or number (percentage); the AFI is calculated in centimeters.

Prior to amnioinfusion, case patients with a pregnancy duration less than 37 weeks received 2 doses of betamethasone (Betnesol; GlaxoSmithKline, Nashik, Maharashtra, India). In all case patients, a slow intravenous infusion of isoxsuprine (Duvadilan; SolvayPharma, Ahmedabad, Gujarat, India) in 5% dextrose was initiated before and lasted through the amnioinfusion. The latter consisted of 250 mL of Ringer lactate.

3. Results

Pregnancy duration was less than 34 weeks in 30% of case patients; between 34 and 37 weeks in 50%; and greater than 37 weeks in 20%. The AFI was between 3 and 5 cm in 52% of all study participants; between 6 and 8 cm in 34%; and less than 3 cm in 14% (Table 2). Pregnancy-induced hypertension was present in 18% and fetal growth restriction was seen in 68% of all study participants.

After APTA the mean AFI increased by 3 cm and the nonstress test result was reactive in all case patients (Table 3). The procedure was uneventful in 82% of the case patients; however, 4 women had intraprocedure uterine irritability, which decreased with an increased dose of isoxsuprine. One woman had preterm labor, two had mild fever, and one woman with severe pre-eclampsia had accidental hemorrhage.

The mean interval between admission and delivery was 7.4 days for controls and 18.44 days for case patients. One patient with a 39-week pregnancy was delivered within 24 h of receiving APTA. The latency period was 7 days or more for case patients with a pregnancy duration between 28 and 30 weeks. Of the women with a pregnancy duration between 31 and 33 weeks, 6% had a latency period of 15 to 30 days and 16% had a latency period greater than 30 days. Of those with a pregnancy duration between 34 and 37 weeks, 10% were delivered within 72 h, 16% within 7 days, and 4% after 14 days (Table 4).

Spontaneous onset of labor occurred in 28 case patients (56%), of whom 78.5% had a normal vaginal delivery, 1 (3.5%) was delivered instrumentally, and 5 (18%) underwent a CS. Of the 22 case patients in whom labor was induced, 20 (90.9%) had a normal vaginal delivery and 2 (9.1%) had a CS (Table 5).

Table 2 Pregnancy duration, amniotic fluid index, and nonstress test results in case patients and controls [a]

Variables	Case patients			Controls			Total
	AFI < 3	AFI 3–5	AFI 6–8	AFI < 3	AFI 3–5	AFI 6–8	
PD 28–30 weeks							
R	0	0	1 (2)	0	0	1 (2)	2
NR	1 (2)	1 (2)	0	0	1 (2)	0	3
D	1 (2)		0	0	1 (2)	0	2
PD 31–33 weeks							
R	0	4 (8)	2 (4)	0	1 (2)	2 (4)	9
NR	0	1 (2)	1 (2)	1 (2)	3 (6)	1 (2)	7
D	0	2 (4)	1 (2)	1 (2)	2 (4)	1 (2)	7
PD 34–37 weeks							
R	0	11 (22)	3 (6)	0	8 (16)	3 (6)	25
NR	1 (2)	2 (4)	2 (4)	1 (2)	5 (10)	2 (4)	13
D	2 (4)	1 (2)	3 (6)	2 (4)	2 (4)	2 (4)	12
PD > 37 to 40 weeks							
R	0	2 (4)	2 (4)	0	2 (4)	4 (8)	10
NR	1 (2)	2 (4)	1 (2)	0	0	1 (2)	5
D	1 (2)	0	1 (2)	2 (4)	1 (2)	0	5
Total	7	26	17	7	26	17	100

AFI, amniotic fluid index; D, decelerations; NR, nonreactive; PD, pregnancy duration; R, reactive; NST, nonstress test.
[a] Values are given as number or number (percentage); the AFI is calculated in centimeters.