The Professional Medical Journal
www.theprofesional.com

DOI: 10.17957/TPMJ/17.3653

ORIGINAL PROF-3653

AFI IN PREGNANT PATIENTS;
DOES DEHYDRATION LEAD TO DECREASE IN QUETTA REGION OF PAKISTAN

Dr. Farkhunda Akhtar[1], Dr. Arooj Aziz[2], Dr. Arfa Hamid[3], Dr. Tooba Hamid[4]

1. MBBS, DGO, MCPS, FCPS, Head of Department, Obstetrics and Gynaecology Combined Military Hospital, Quetta
2. MBBS Post Graduate Trainee Gynae/OBS, Department, Combined Military Hospital, Quetta
3. MBBS Student Final Year
4. MBBS Student

Correspondence Address:
Dr. Farkhunda Akhtar
Head of Department
Obstetrics and Gynaecology
Combined Military Hospital, Quetta
farkhundahamid@hotmail.com

Article received on:
29/09/2016
Accepted for publication:
10/12/2016
Received after proof reading:
18/01/2017

ABSTRACT… Background: Amniotic fluid plays major role in fetal growth & development. Abnormalities of fluid volume can affect fetal development causing many structural anomalies. Maternal dehydration leads to changes in amniotic fluid index by changing net movement of fluid into or from the fetus. **Study Design:** Cross sectional study was carried out to asses increase incidence of reduced amniotic fluid index in Quetta due to dehydration. **Period:** Year of 2015. **Method:** The study was a cross sectional study for this purpose 50 pregnant patients referring to obstetric Out Patient Department of Combined Military Hospital Quetta were investigated for changes (improvement, or no change) in amniotic fluid index after hydration therapy. The under studied population was pregnant women between 20th_ 38th week of gestation referring to obstetric Out Patient Department of Combined Military Hospital Quetta with amniotic index less than 10.The study was conducted after approval of ethical committee. **Result:** Patients showed significant improvement in AFI after hydration therapy. **Conclusion:** QUETTA region, a combination of dry and cold weather leads to decrease fluid intake and greater insensible losses that results in reduced AFI. Increased incidence of reduced AFI is highly due to maternal dehydration that can be improved with maternal hydration.

Key words: Amniotic fluid index, Improved Amniotic Fluid Index, Pre labour rupture of membranes, pre term pre labour rupture of membranes, isolated oligohydroamnios.

Article Citation: Akhtar F, Aziz A, Hamid A, Hamid T. AFI in pregnant patients; does dehydration lead to decrease in Quetta region of Pakistan. Professional Med J 2017;24(1):102-105. **DOI:** 10.17957/TPMJ/17.3653

INTRODUCTION

Dehydration has been considered as an important phenomenon to be monitored in the entire range of pregnancy situations ranging from normal to complicated cases Dehydration is directly linked with Amniotic fluid that surrounds & protects the fetus in amniotic cavity. Amniotic has a major role in fetal growth & development. Abnormalities of fluid volume can interfere directly with fetal development causing structural anomalies such as pulmonary hypoplasia, fetal hypoxia, neural tube defects & gastrointestinal obstruction.[1,2]

There are many causes of reduced amniotic fluid index such as bilateral renal agenesis, posterior urethral valve, infantile polycystic kidney disease, IUGR and placental insufficiency, PROM, PPROM and maternal dehydration.[1]

The maternal dehydration which is leading to oligohydroamnios can be corrected simply by oral or intravenous rehydration.[1,2]

Research shows that about 3-5% of pregnancies are complicated by oligohydroamnios & is less than half of the cases, the diagnosis is made in the absence of maternal and fetal risk Factors & is therefore defined “isolated oligohydroamnios” (IO).[1]

In QUETTA combination of dry n cold weather leads to decrease fluid intake n greater insensible losses that in turn leads to maternal dehydration. This dehydration may be attributable factor for increased incidence of isolated oligohydroamnios in QUETTA.

MH may be a safe, well-tolerated and useful strategy to increase AFV in cases of IO. In view of the numerous obstetric situations in which a

reduced AFV may pose a threat, particularly to the fetus, the possibility of increasing AFV with a simple practice like MH-therapy may have potential clinical applications.[1]

Many studies have suggested that oral and intravenous hydration can increase the amniotic fluid index (AFI) in normal pregnancies & in pregnancies with oligohydroamnios.[1,2,3,4,5]

This study has taken into account the patients bearing dehydration problem with AFI less than 10.

MATERIALS & METHODS

50 pregnant cases with amniotic fluid index less than 10 were studied for improvement in amniotic fluid index after intravenous hydration with hypotonic fluid like 5% dextrose water.

Patients with risk factors for oligohydroamnios like chronic hypertension, pregnancy induced hypertension, fetal anomalies, PROM, PPROM, DM and GDM were excluded from study.

Patients underwent 1-2 weeks of hydration therapy & then ultrasound for Biophysical profile including amniotic fluid index were done using 3.5 MHZ probe to see improvement in amniotic fluid index

RESULTS

Pregnant patients with wide range in their ages were part of the study who reported obstetric OPD of CMH Quetta for treatment with reduced Amniotic Fluid. Mean age of patients was observed 29.2 years. Patients with minimum age of 20 years and maximum 40 years were part of this study.

Mean Gestational age (AG) was observed as 33.9 weeks with standard deviation of 2.98 weeks. The patients reported with minimum GA of 22 weeks whereas, 38 weeks pregnancy was observed at higher end of the patients coming for treatment having problem due to AF at lower side.

The mean AF Index of 6.85 with standard deviation of 1.31 was observed in the patients. The minimum AF index was observed as 3 whereas, AF index value of 9 at the higher side was observed in patients understudy.

Mean improvement in the AF index was observed as 9.72 with standard deviation of 1.44 with extreme values of 6 and 14 were observed as minimum and maximum respectively. Table-I shows the descriptive statistics.

Table-II shows the paired samples correlations between the AF index of the patients coming for the treatment and AF index after getting the hydration therapy. A moderate correlation ($r = 0.350$) was observed between two indices AF (before and after treatment), however this relation was observed significant ($p < .05$). This means that patients with more AF index before treatment, on the average, showed more improvement after getting the treatment.

On the average the patients with reduced AF index showed significant improvement in the AF index after getting the hydration therapy. This means that on the average patients with reduced AF index before treatment ($M = 6.85$, $SE = .20$) as shown in Table-III have significantly improved after getting the hydration therapy ($M = 9.72$, $SE = .225$, $t(40) = -11.66$, $p < .01$) as shown in Table-III and IV.

	N	Minimum	Maximum	Mean	Standard Deviation
Age	41	20	40	29.02	5.047
GA	41	22.00	38.00	33.9	2.98165
AFI	41	3.00	9.00	6.85	1.31303
IAFI	41	6	14.00	9.72	1.442
Valid N (list wise)	41				

Table-I. Descriptive Statistics

		N	Correlation	Significance
Pair 1	AFI & IAFI	41	0.350	0.025

Table-II. Paired Samples Correlations

		Mean	N	Standard Deviation	Standard Error Mean
Pair 1	AFI	6.85	41	1.31303	0.20
	IAFI	9.72	41	1.442	0.225

Table-III. Paired Sample Statistics

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	AFI - IAFI	-2.86585	1.57379	0.24578	-3.36260	-2.36911	-11.660	40	.000

Table-IV. Paired Sample Test

DISCUSSION

The dehydration as a contributor factor was single out from the other sources of reduced AFI and after giving the intravenous hydration therapy for at least 15 days, the significant improvement in the AFI after hydration therapy leads us to infer the dehydration as one of the main factors of reducing the AF in pregnant patients in Quetta region.

Dry weather in Quetta leads to more insensible water loss from body and also affects thirst centre resulting in decrease oral intake of fluid, such dehydration can cause number of adverse effects like headaches, nausea and fatigue. Among pregnant women along with such side effects amniotic fluid volume is also affected as it disturbs the equilibrium of water moving to and from the fetus.

It has been observed that on average patients showed significant improvement in AFI after treatment ($t(40) = -2.87$ $p < 001$). This leads us to conclude that dehydration had caused sufficient decrease in AFI in pregnant patients coming for treatment form Quetta region. The results of this study are conformed to other studies carried out in similar areas such as study carried out by Satyaryana P, Ramarao N, Parmer C in 2015in Konaseema area –EG district which also showed decrease in amniotic fluid index in summer season due to dehydration.

In QUETTA region, dry weather prevails throughout the year. In winters too much cold weather along with its dryness further deteriorates hydration status resulting in more patients presenting with reduced amniotic fluid. Oligohydroamnios can lead to increase in no of fetal morbidity and mortality7. Hence simply reducing incidence of reduced amniotic fluid volume can cut down the no of caesarean deliveries done for this reason. Maternal hydration is simple and inexpensive method of improving AFI in pregnancies complicated by dehydration7.

Maternal hydration can also results in improved amniotic fluid index in other areas of Pakistan where hot weather leads to dehydration and reduced amniotic fluid.

Results based on the sample of 50 patients suggests that MH may be a safe, well-tolerated and useful strategy to improve AF index especially in cases of IO. Hypotonic solutions should be preferred to isotonic solutions and administered at low dose (about 1500 ml per day) for long periods (ideally for 2 weeks). In view of many obstetric situations in which a reduced AFV may pose threats, particularly to the fetus, the possibility of increasing AFI with a simple and inexpensive method like MH may certainly have useful clinical applications in obstetric care.

CONCLUSION

QUETTA region, a combination of dry and cold

weather leads to decrease fluid intake and greater insensible losses that results in reduced AFI. Increased incidence of reduced AFI is highly due to maternal dehydration that can be improved with maternal hydration.

Future work

This study was conducted in Quetta region which has dry and cold climatic condition. We recommend that same study may be conducted in other regions of Pakistan having both or at least one of these climatic conditions.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Farkhunda Akhtar	Fitst Author	
2	Dr. Arooj Aziz	Co-Author	
3	Dr. Arfa Hamid	Co-Author	
4	Dr. Tooba Hamid	Co-Author	