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Role of Increased Hydration in Women in Labor with Unrestricted Oral Intake of Fluids - A Randomised Study

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Abstract: ***Increased intravenous hydration reduces the labor duration and oxytocin augmentation when oral fluid is restricted.The objective of this study is to compare duration of labor,need for oxytocin augmentation and the mode of delivery in women with unrestricted intake of oral fluids. Methodology: On randomization,out of 60 women, 30 will be allowed to take unrestricted oral fluids and the remaining 30 were encouraged to take more fluids along with IV fluids. Results: There was no difference in the labor duration (147.40 vs 138.33 min) ,the need for oxytocin augmentation(90% vs 93%), the normal delivery rate(93.3% vs 93.3%) ,operative delivery rate(6.7% vs 6.7%) between the two groups. Conclusion: Increased intravenous hydration does not decrease the labor duration when oral fluid is unrestricted.***

Keywords: Reduction in labor duration interval, Oxytocin augmentation rate

1. Introduction

Labour is a strenuous process requiring energy and stamina. However, during labour, the practice of restricting oral intake to varying degrees is common[1]. Maternal hydration is one of the variables that affects the course of labor but has not been evaluated properly. The maintenance of hydration throughout labor is essential for the women well being[2].

The practice of restricting oral intake during labourwas originally introduced in the 1940s to prevent gastric aspiration pneumonitis in the event of operative intervention requiring general anaesthetic (Mendelson, 1946). With advances in midwifery and obstetric practice and refinements of analgesia and anaesthesia, the validity of this practice can be questioned[1].
Recent studies demonstrated that increased intravenous fluids at the rate of 250 ml/hr in nulliparous women reduced the incidence of prolonged labors[3].These studies restricted laboring women to nil by mouth which is done in most delivery units.

Increased intravenous hydration is associated with decreased labor duration and oxytocin augmentation in nulliparous women when oral fluid is restricted[3]. This study is undertaken to determine whether giving higher rates of fluids to nulliparous women in labor still reduces labor duration when oral fluids are unrestricted.

Aim
To study the effect of increased hydration in the progress of labor in women with unrestricted fluid intake.

Primary Objective
To compare duration of labour between women who are at their will to drink orally water and fruit juices as one group versus women who are encouraged to take more oral fluids and IV fluids on discretion of investigator as second group.

Secondary Objectives
1) To compare need for oxytocin augmentation between the two groups
2) To study and compare operative vaginal delivery rate between the two groups.
3) To compare NICU admissions in both groups.
4) To study neonatal outcomes in both groups.

Subjects & Methodology
Study method: A prospective randomized study
Study subjects: All nulliparous low risk women admitting to the inpatient department of maternity hospital, tirupathi.
Study area: Institute of pregnant women-Government maternity hospital, tirupathi
Sample size: 30 in each group

Inclusion Criteria
1) Only nulliparous women in spontaneous labor with a singleton, vertex presentation >37 weeks gestation with adequate pelvis were included.
2) Nulliparouswomen with dilatation of ≥4 cm were eligible for inclusion.
3) Women who gives written and informed consent were included.

Exclusion Criteria
1) Women who were planned for elective induction or cesarean section were excluded.
2) Nulliparous women diagnosed as having preeclampsia, diabetes, chorioamnionitis, cardiac or renal diseases at the time of admission were excluded.

2. Methodology

60 nulliparous women in labor who have met all the inclusion and exclusion criteria were randomly allotted to one of the two groups. Randomisation was carried out by random table number. One group of people were at their will to take unrestricted oral fluids of their choice and the other group were given 2 pints of 25% Dextrose, 1 pint of Ringer Lactate at the time of admission in active labor and they were encouraged to take more oral fluids. The staff nurse calculated the amount of oral fluid intake in both groups. Both groups were compared in terms of labor duration, need for augmentation of labor, ,need for operative vaginal

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delivery and NICU admissions. Neonatal outcomes studied in both groups.

Main Outcome Measure
Reduction in labor duration interval.

Secondary Outcome Measure
Oxytocin augmentation rate, NICU admissions, Neonatal outcome.

Statistical Analysis
Statistical data was analyzed by using epi info version 7.A p value of <0.05 is considered as statistically significant.

Ethical Issues
Before collection of data all the subjects were briefed about the purpose of study and written informed consent was obtained. No financial burden was imposed on the patient.

3. Results

Table 1

Characteristics	Study Group (n=30)	Control Group (n=30)	$\chi 2$ /t-test (p-value)	Remarks
Age (Years)	22.10±2.670	22.90±2.964	1.099	P>0.05
<22 Years	20 (66.7)	15 (50.0)	1.714 (0.190)	P>0.05
>25 Years	10 (33.3)	15 (50.0)		
Effacement	81.83± 7.13	80.67±6.12	0.680 (0.499)	P>0.05
Dilatation	4.67±0.88	4.63±0.81	0.152 (0.879)	P>0.05
Station of Head	-1.30±0.84	-1.60±0.77	1.445 (0.154)	P>0.05
-3	1 (3.3)	3 (10.0)	3.085	P>0.05
-2	13 (43.3)	14 (46.7)		
-1	10 (33.3)	11 (36.7)		
0	6 (20.0)	2 (6.7)		

Table 2

		Group				$\chi 2$ /t-test (p-value)	Remarks
		Study		Control			
		NO. of Patients	%	NO. of Patients	%		
Oxytocin Augmentation	Yes	27	90.0	28	93.3	0.218 (0.640)	P>0.05
	No	3	10.0	2	6.7		
Mode of Delivery	NVD	28	93.3	28	93.3	1.333 (0.513)	P>0.05
	Outlet	1	3.3	0	.0		
	Vacuum	1	3.3	2	6.7		

Table 3

	Group	N	Mean± S.D	t-test (p-value)	Remarks
First stage	Study	30	134.00±123.34	0.268 (0.789	P>0.05
	Control	30	127.27±60.65		
Second Stage	Study	30	13.40±6.28	1.134 (0.262)	P>0.05
	Control	30	11.07±9.36		
Overall	Study	30	147.40±125.32	0.352 (0.726)	P>0.05
	Control	30	138.33±64.59		

Of 60 women who met inclusion and exclusion criteria were randomized, of which 30 women received unrestricted oral fluids and the other 30 women were encouraged to take more oral fluids along with IV fluids at the discretion of investigator. The IV fluids given were 2 pints 25% Dextrose and 1 pint Ringer lactate.

Table-1 compares baseline characteristics between the two groups. The baseline variables like maternal age, cervical effacement, cervical dilatation, station of the head were similar in between both groups.

The IV fluid group received extra IV fluids along with encouragement to take more oral fluids.

Table-2 compare the duration of stages of labor, mode of delivery, need of oxytocin augmentation between the two groups. There was no difference in the % of normal vaginal delivery, need for oxytocin augmentation in both groups .In both groups there were no NICU admissions and all the babies were discharged healthy.

4. Discussion

Despite giving extra IV fluids and encouragement to take more oral fluids there is no difference in labor duration or oxytocin augmentation between the two groups. We believe that when women are allowed to drink freely there is no need of intravenous fluids for the progression of labor.

In a study conducted in California the frequency of labor lasting more than 12 hrs was less in a group of nulliparous women receiving 250ml/hr than in a women receiving 125ml/hr[3].

In a similar study conducted in Iran showed that the duration of labor was significantly shorter in 250 ml/hr study group when compared to 125 ml/hr group[5].In both studies mentioned above, the women were not allowed to drink except ice chips in the first trial.

In another study conducted in Lancaster, the treatment group received 250 ml/hr Ringer lactate along with unrestricted fluid intake while the comparison group received unrestricted oral fluids that only included IV fluid at the discretion of investigator. Both groups were given unlimited access to oral fluids. This study found that there is no difference in labor duration, need of oxytocin augmentation and mode of delivery between the two groups. This study

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results are comparable to the present study showing that there is no added benefit with intravenous hydration.

Self-regulating intake of fluids decrease stress while providing a feeling of control.While the administration of IV fluids did not cause any complication in the study there is a theoretical risk of fluid overload in both mother and baby.

5. Limitations

The study was conducted in a small sample and for a shorter period of time.

6. Recommendations

Large number of multicentric trials is needed to emphasise the importance of intravenous hydration and the role of supplemental oral hydration in the progress of labor.

7. Conclusion

In summary, an increased rate of hydration showed no benefit in progress of labor over the group of women who were allowed to drink freely. Allowing the women to take oral fluids at their choice not only maintains hydration but also reduces the fluid overload because of intravenous administration.

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