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The effects of water birth on neonatal outcomes: a five-year result of a referral tertiary centre

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Abstract. – OBJECTIVE: As scant information is present about the effect of water birth on newborns, we aimed to detect the fetal outcomes of water birth.

MATERIALS AND METHODS: A hundred and ninety one among totally 220 newborns who were born by water birth were enrolled. The demographic and clinical features of the patients, birth complications, infection rates and rates of neonatal intensive care unit attendance were evaluated.

RESULTS: The mean gestational week and birth weight were 39.2±1.3 weeks and 3326±409 g. 26% of the mothers was primiparous. Birth trauma was observed in three patients (1.6%) as one brachial nerve paralysis, one cord rupture and one cephal hematoma. Six of the patients (3.1%) were admitted to neonatal intensive care unit (NICU); four of whom had respiratory tract problems.

CONCLUSIONS: Water birth is a safe method of delivery for the neonates when certain criteria are met.

Key Words:
Water birth, Neonatal outcome, Birth complication.

Introduction

Water birth is a method of pain relief that many women have chosen during childbirth. It was first reported when a French woman gave birth successfully in a bathtub in 1805[1]. As bathing was discovered to relieve the pain during labor or delivery, it has gained popularity. When a woman is immersed in warm water, there are also additional benefits other than pain relief as the water supports the woman's body. Over the years, many water birth processes were performed. Odent et al[2] reported the results of more than 100 water births in 1983. The House of Commons Health Committee in the United Kingdom released a statement that "all woman should be offered the option of water birth"[3]. Although Royal Obstetricians and Gynecologists published a guideline that there are no difference in the outcome for the baby there is still ongoing controversies about its safety and general outcome[4].

The results of water birth were reported on a limited number of prospective and retrospective studies, and only few of them reported its effect newborns[5-7]. In this report we aimed to evaluate the fetal outcomes of water birth retrospectively in a tertiary maternity hospital in Turkey.

Materials and Methods

At our Antenatal Clinic, Every interested pregnant woman who were at low risk group for obstetric and maternal complications was informed about water birth. The volunteer women with a gestational age > 37 weeks, a normal sized fetus, a reactive cardiotocogram, clear amniotic fluid and a pregnancy with cephalic presentation had a chance of water birth. Exclusion criterias were intrauterine growth restriction, pathological or suspicious fetal cardiotocogram, meconium-stained amniotic fluid, maternal infection with hepatitis B, C, HIV or acute genital herpetic infection, fetal macrosomia, history of shoulder dystocia[8].

After obtained approval for the study from the local Ethic Committee we performed a retrospective study in infants borned with water birth from January 2005 to May 2010 in our referral tertiary center. A total of 220 water births were performed in this period but we could accessed the data of 191 infants. All of the patients were screened for group B streptococcus (GBS) infection at the 37th gestational week and evaluated for

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HIV, hepatitis B or C infection before the labor. The women who were interested in water birth signed a written consent.

All delivery and hospitalization data of newborns were recorded from the patient files retrospectively. The demographic and clinical features of the patients, hospitalization date, nutritional status, birth complications such as trauma, infection and neonatal intensive care unit (NICU) attendance rates were evaluated.

Statistical Analysis

SPSS 16 for Windows® (SPSS Inc., Chicago, IL, USA) was used for statistics in the study. Statistical analysis are expressed as mean ± SD. $p < 0.05$ was considered statistically significant.

Results

When a total of 191 pregnant women who met the inclusion criteria and had complete data were evaluated, it was observed that 26% of the mothers were primiparous, and male to female ratio in newborns was 1.22. The maternal and neonatal demographic characteristics of the patients are summarized in Table I.

Birth trauma was observed in only three patients; one brachial nerve paralysis, one cord rupture and one cephal hematoma. None of these patients needed extended hospitalisation time as a result of these complications (2, 2 and 3 days, respectively). Six of the patients (3.1%), who are summarized in Table II, were admitted to the NICU. The patients 2, 3, 4, and 5 were hospitalized because of respiratory tract problems. Except the patient who received antibiotic therapy because of neonatal pneumonia, infection screening was negative for the other three patients. All the other newborns were evaluated as healthy and observed beside their mother for one day, and breast fed.

Discussion

Although water birth has become a popular method of delivery in recent years, there have been some controversies because of probable maternal risks like infection and increased blood loss, and fetal risks like aspiration, hypoxemia and infections[9-12]. The results of water birth depend on a limited number of studies and only scant information has been reported about its impact on newborns[5-7].

In this report, we evaluated the fetal outcomes of water birth in a tertiary maternity teaching hospital in which 2/1000 of all deliveries occured in water. Although most of the women was multiparous (74%) in our study group, number of primiparous women can not be underestimated because of a percentage of 26. We speculate that water birth has no negative impact on infants of the primiparous women as only one of the six patients that was admitted to NICU was a baby of a primiparous woman.

The hygiene of the bathtub before and after the birth is very important. During delivery, fecal matter is released into the pool water, contaminating it with micro-organisms. Despite this, water birthing

Table I. The demographic characteristics of the patients.

Maternal age (mean, SD)(range) (years)	26.3 ± 5.2 (17-44)
Gestational week (mean, SD) (range) (weeks)	39.2 ± 1.3 (37-412)
Birth weight (mean, SD) (range) (grams)	3326 ± 409 (2530- 4510)
Sex (M/F)	105/86
Gravidity	
Primigravida	49 (26%)
Second gravida	73 (38%)
Third gravida	44 (23%)
Fourth gravida	19 (9%)
Fifth gravida	2 (1%)
Sixth gravida	3 (1.5%)
Seventh gravida	–
Eight gravida	1 (0.5%)
Parity	
Primiparous	49 (26%)
Multiparous	142 (74%)

Table II. The demographic and clinical features of the patients admitted to NICU.

Patient number	Maternal age	Gestational age (week)	Birth weight (g)	Sex	Gravidity/ parity	Diagnosis/duration of hospital stay
1	24	39	4010	M	4/3	Polycythemia/2 days
2	29	38.2	4000	F	2/2	Transient tachypnea of newborn/2 days
3	34	40	2660	F	2/2	Neonatal pneumonia/5 days
4	34	401	2660	M	3/3	Transient tachypnea of newborn/1 days
5	28	396	3000	F	1/1	Transient tachypnea of newborn/1 day
6	27	371	2530	F	6/3	Myelocele, operated/7 days

M: male, F: female.

was found to be safe for the neonate and did not carry a higher risk of neonatal infection when compared with conventional vaginal delivery5,13-15. Bodner et al7 reported that there is no significant difference for neonatal parameters between women who had water births and conventional vaginal delivery. Thoeni et al13 reviewed 1600 water births at a single institution over an 8-year period and the rate of neonatal infection was not increased with water birth as compared with conventional delivery. Zanetti-Dallenbach R et al15 conducted a prospective study about the impact of water birth on the colonization rate of the bath water and the GBS colonization rate of the newborn. They reported that newborns showed no difference in GBS colonization after a water delivery. As similar in the literature, neonatal infection rate was not high in our serie. Except the patients who received antibiotic therapy because of neonatal pneumonia, infection screening tests were negative in all the other patients.

Complications of water birth have been reported in few studies in the literature. Bowden et al[12] reported four neonates (respiratory distress syndrome, seizure due to hyponatremia, newborn with multiple congenital anomalies and group B streptococcal meningitis) admitted to the NICU after underwater birth. Alderdice et al[16] reported 12 neonatal deaths and 51 infants with morbidities among 4494 women who gave birth underwater. Kassim et al[17] reported a 40-week-gestation male infant borned in birthing pool and admitted to the NICU due to aspiration of the birthing pool water. A surveillance study in England and Wales found a perinatal mortality rate of 1.2/1000 (5/4030). The risk of admission to the NICU for lower respiratory tract problems was 0.4% for infants delivered via water birth (18). When compared to the previous studies, low rate of birth related complication and related hospitalization in our serie were compatible with the literature.

In a prospective, longitudinal study which compared water births to land births, it was reported that water births showed a significantly higher rate of births without injuries[19]. Water and land births did not differ in respect to neonatal infections and after land births, there was a significantly higher rate of newborn complications. Pellantova et al[20] reported the results of a 5-year retrospective study, and showed that there were no somatic differences and postnatal pathologies by the newborns in both groups after delivery. Thöni et al[21] reported their case load with 1575 water births and revealed that water birth has major advantages compared with traditional delivery methods, associated with a significantly shorter first stage of labor, a lower episiotomy rate and reduced analgesic requirements and no increased risk of neonatal infection. Thöni et al[14] documented 2625 water births over 12 year period and compared outcome and safety with normal vaginal delivery and shoulder dystocia/neonatal complications were observed in four water births. We did not compare our water birth results with the normal vaginal births because if we had performed a comparison between groups we could have included retarded fetuses, pathological suspicious fetal cardiogram, fetal macrosomia, etc who were excluded in water birth group. Although we did not performed this comparison our data showed similarity with the results of land births reported in the literature.

Conclusions

Our report demonstrated that water birth is a safe, valuable and promising alternative method of delivery for the neonates when certain crite-

ria are met, and its effect on neonatal outcomes, particularly related to complications and neonatal admission to the NICU seems to be acceptable.

Conflict of Interest

None to declare

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