

The Effect of Traditional Remedies (Camel's Thorn, Flixweed and Sugar Water) on Idiopathic Neonatal Jaundice

Hassan Boskabadi*¹, MD; Gholamali Maamouri¹, MD, and Shahin Mafinejad², MD

1. Neonatal Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
2. Department of Pediatrics, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

Received: May 19, 2010; Final Revision: Dec 28, 2010; Accepted: Feb 05, 2011

Abstract

Objective: Jaundice is the most common reason of newborn's admission to neonatal ward. Many Iranian families give traditional remedies like sugar water, camel's thorn and flixweed extracts to breast-fed babies for reducing jaundice. This study investigated the effect of traditional remedies on idiopathic neonatal jaundice.

Methods: This prospective study has been performed on 336 babies with idiopathic jaundice in a four year period (2005-2009) at Ghaem hospital, Mashhad, Iran. The babies were divided into two groups. In case group (n=234) breast-fed babies received no remedy and in control group (n=102), traditional remedies were given additional to breast milk and the results recorded and compared.

Findings: In the present study significant differences were observed between the two groups in age of admission (6.8 ± 3.2 vs 9.2 ± 3.7 day, $P < 0.001$), serum bilirubin values (17.8 vs 21.3 mg/dl, $P < 0.001$) and percent of weight loss ($P < 0.01$). There were no significant differences between the two groups in birth weight, sex, gestational age and duration of hospitalization, age at jaundice remission, hematocrit value and maternal factors (age, gestational order, pregnancy and labor problems) ($P > 0.05$).

Conclusion: Traditional remedies (camel's thorn, flixweed and sugar water) cause more weight loss and delayed reexamination of newborns leading to increased hyperbilirubinemia. These remedies may raise pseudo confidence in parents, which postpones reexamination and follow up of the newborns.

Iranian Journal of Pediatrics, Volume 21(Number 3), September 2011, Pages: 325-330

Key Words: Hyperbilirubinemia; Traditional Medicine; Camel's thorn; Flixweed; Neonatal Jaundice

Introduction

Hyperbilirubinemia is a common and in most cases benign problem in neonates. Jaundice

appears during the first week of life in approximately 60% of term and 80% of preterm infants. Jaundice may develop serious complications like kernicterus and lifelong

* Corresponding Author;

Address: Neonatal Research Center, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

E-mail: boskabadih@mums.ac.ir

© 2011 by Pediatrics Center of Excellence, Children's Medical Center, Tehran University of Medical Sciences, All rights reserved.

disability [1,2]. By discharging mothers too early from hospital, some newborns may be discharged before jaundice appears. Complications related to hyperbilirubinemia can affect newborns due to parents' inappropriate attention for reexamining the babies by specialist after early discharge from hospital [3,4].

Practical management by giving traditional remedies like sugar water, camel's thorn and flixweed extracts to breast-fed babies for reducing jaundice is popular in Iranian culture. During the first days of life, newborns may have insufficient breastfeeding for various reasons or mothers find uncomfortable during lactation, therefore many families in our country believe, these remedies are effective for calming the babies and reducing hyperbilirubinemia [4].

Camel's thorn is a deep-rooted, rhizomatous, perennial shrub, with roots that can extend six to seven feet into the ground. The spiny, intricately-branched shrub reaches 1.5 to four feet in height. Camel's thorn is diuretic and may act against whooping cough, fever and chilling. In ancient medicine, camel's thorn was prescribed for bile, kidney and bladder stones [7].

The current study was undertaken to determine the prevalence rate of jaundiced infants who received traditional remedies and the effect of these remedies on the course of hyperbilirubinemia.

Subjects and Methods

This descriptive analytic study has been done from April 2005 to September 2009 on 811 jaundiced infants who were admitted to neonatal intensive care unit (NICU) and pediatric emergency room or visited at the clinic in Ghaem hospital in Mashhad, Iran. Clinical jaundice is determined by yellowish color of sclera, mucosa and skin. The ethic committee of Mashhad University of Medical Sciences approved this study and all parent of patients signed informed consent.

Maternal age, blood group, disease, history of pregnancy and delivery, type of delivery, duration of hospitalization after delivery and gestational order were all recorded.

Time of jaundice appearance and discharge from hospital, signs and symptoms on admission, duration of hospitalization, treatment plan and results of complete physical examination were recorded. Finally laboratory tests (indirect and direct bilirubin, coombs test, hematocrit, reticulocyte count, blood type and in some cases, thyroid test, G6PD and urinalysis) were evaluated.

From 811 newborns, 544 were fed exclusively with breast milk; 267 had taken the traditional remedies. Cases with known causes of hyperbilirubinemia (hemolytic, prematurity, symptomatic jaundice, sepsis) and those with non compliant parents were excluded and finally 336 babies with idiopathic hyperbilirubinemia were found eligible for the study. They were divided into two groups: In control group (n=234) breast-fed babies received no remedy and in case group (n=102) traditional remedies like camel's thorn, flixweed and sugar water were given (Fig 1).

Treatment method and hospitalization period were recorded. Statistical analysis was carried out using SPSS 11.5 statistical package. The Student's t-test and Chi-square test were performed on quantitative and qualitative variables. *P*-value less than 0.05 was considered statistically significant.

Findings

Of 811 newborns evaluated during four years, 336 infants were included in this study and were placed in two groups (102 in case group and 234 in control group).

Traditional remedies (glucose water, camel's thorn and flixweed extracts) were taken by 267 (33%) newborns and 43 percent of cases with idiopathic hyperbilirubinemia had a history of receiving at least one of these remedies. Maternal characteristics (age, gestational order, and method of labor induction) were recorded (Table 1).

Traditional remedies received by newborns were recorded as follow: camel's thorn in 81, both camel's thorn and flixweed in 11 and sugar water in 10 babies. These remedies were given 1 to 15 times to infants (7 times in average).

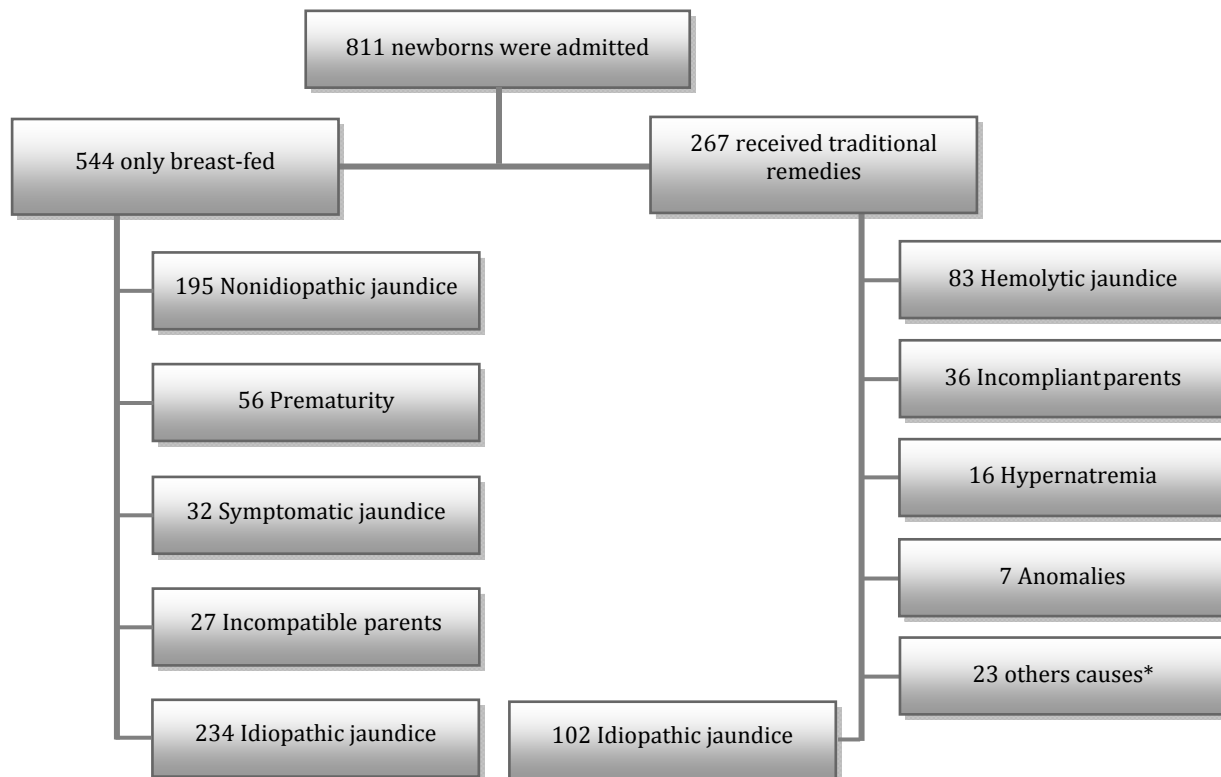


Fig. 1: Flowchart of the study

* Infant of a diabetic mother, hypothyroidism, adernal hemorrhage, ecchymoses, Cephalhematoma Polycythemia

Traditional remedies received by newborns were recorded as follow: camel's thorn in 81, both camel's thorn and flixweed in 11 and sugar water in 10 babies. These remedies were given 1 to 15 times to infants (7 times in average).

Infantile characteristics (sex, birth weight, weight at admission, time of jaundice appearance, age of admission and hospitalization period) were also recorded (Table 2).

The mean age of admission in control and case group was 6.8 (± 3.2) and 9.2 (± 3.7) days, respectively ($P < 0.001$, Table 2). The mean serum bilirubin in case and control groups was defined as 21.3 (± 4.5) and 17.8 (± 5.5), respectively ($P < 0.05$, Table 3).

Discussion

The present study reveals that traditional remedies (camel's thorn, flixweed and sugar water) neither improve weight gaining, nor decrease jaundice. These remedies may raise pseudo confidence in parents, which postpones reexamination and follow up of the newborns.

General beliefs are part of the society culture and transmitted from elders to youth. Therefore these beliefs are respectable among people [8]. These traditional ideas are sometimes useful and sometimes harmful in the health program, for example keeping the neonates warm during the first hours after birth by local midwives may help

Table 1: Maternal characteristics of the studied case and control groups

Characteristics	Control group	Case group	P-value
Mother age (year) [Mean (SD)]	26.7 (6.1)	27.5 (7.1)	0.3
Delivery type (vaginal/cesarean)	125/97	53/49	0.5
Parity [Mean (SD)]	1.8 (1.6)	2.0 (1.9)	0.5

SD: Standard Deviation

Table 2: Neonatal characteristics of the studied case and control groups

Characteristics	Control group Mean (SD)	Case group Mean (SD)	P-value
Birth weight (kg)	3.0 (0.7)	3.2 (0.5)	0.06
Weight at admission (kg)	3.0 (0.8)	3.1 (0.5)	0.01
Time of jaundice appearance (day)	3.8 (3.2)	4.3 (3.9)	0.4
Hospitalization period (day)	2.3 (1.8)	2.7 (1.6)	0.5
Age of admission (day)	6.8 (3.2)	9.2 (3.7)	<0.001
Sex (male/female)	134/100	60/42	0.7

SD: Standard Deviation

neonates' accommodation with new life^[9], although exaggerating it in the form of swaddling the baby will increase the risk of hyperthermia and weight loss ^[4].

Jaundice among Asians, especially Iranians is common. General belief as "feeding babies with substances which cause soft stool, will improve jaundice" has led to receiving traditional remedies like camel's thorn, flixweed and sugar water by infants. In fact, hyperbilirubinemia is usually self limited; therefore its coincidence with receiving traditional remedies is misunderstood as being effective on jaundice.

We found that 33% of admitted newborns with jaundice received traditional remedies, indicating a serious public belief in our culture and this was not related to mother's age or gestational order. Newborns received traditional remedies as follow: 1) camel's thorn (80%), 2) camel's thorn and flixweed (10.5%), 3) sugar water (9.5%). Newborns received these remedies about 1 to 15 times in the first days of life. Special attention need be given to camel's thorn and its effect and complications.

Pregnancy and labor problems as well as newborn's sex and findings of physical

examination had no significant differences between the two groups, showing that cultural beliefs rather than maternal or infantile problems played an important role in receiving traditional remedies. We found no birth weight difference between the two groups whereas weight at admission was significantly different and newborns who received remedies illustrated more weight loss; therefore this general idea, breast milk deficiency within first days after delivery encouraged mothers to use traditional remedies, is not acceptable. Camel's thorn has a sweet taste. It can decrease appetite and may cause diarrhea, both of them lead to weight loss or inappropriate weight gain. Sugar water and camel's thorn do not have enough calories as breast milk has. 10 milliliters of breast milk has 7 calories, whereas this volume of sugar water has 2 calories^[10]; therefore, these remedies may cause exaggerated weight loss and take a longer time to replace the deficit. Although mean age of newborns' reexamination in the hospital was 7-9 days, weight loss about 6 percent was detected among those who received remedies. Variables like blood urea, creatinine and sodium were higher in the case group compared with control group. This is

Table 3: Laboratory values of the case and control infants

Laboratory tests	Control group Mean (SD)	Case group Mean (SD)	P-value
Total bilirubin (mg/dl)	17.8 (5.5)	21.3 (4.5)	<0.001
Direct bilirubin (mg/dl)	0.9 (1.0)	0.8 (0.6)	0.5
Hematocrit (%)	46.3 (9.9)	44.5 (9.1)	0.1
Platelet count (×1000)	240 (101)	289 (119)	<0.001
Sodium (mg/dl)	141.7 (10.7)	142.3 (8.7)	0.7
Urea (mg/dl)	24 (21)	29.1 (15.6)	0.4
Creatinin (mg/dl)	0.42 (0.1)	1.1 (0.7)	0.07

SD: Standard Deviation

Archive of SID

explained by increased dehydration in newborns who received remedies, although the difference was not significant. Primary result of a new investigation on risk factors of hypernatremic dehydration, detected that newborns who receive remedies, become more jaundiced and lose more weight; therefore these remedies are believed to be an important risk factor for hypernatremic dehydration [4].

The current study reports a significant delay for reexamination in babies who received traditional remedies compared with control group who were fed with breast milk alone. Unfortunately, parents may feel pseudo confident about treatment effect of these remedies and wait long for resolving jaundice. In addition, kernicterus usually occurs within 4th to 7th day of life; therefore delaying of reexamination may cause severe complications for the baby and society.

Our study revealed higher values of serum bilirubin among newborns who received remedies. Our results show that the imagination about effectiveness of traditional remedies on newborn's physiologic jaundice should be changed, otherwise parents not only lose their aim, but also make their babies susceptible to complications. The results of our study are in unanimity with other investigations, such as in Warthon and Mathew's study, who found no significant difference for bilirubin values between newborns who received additional water and those who only received breast milk [11]. Also in an animal study, camel's thorn prescription did not show any significant effect in decreasing serum bilirubin among rats [12]. An *in vitro* study performed by Nabavizadeh et al revealed that adding camel's thorn hydro alcohol derivatives to the serum of babies with hyperbilirubinemia, did not reduce the total bilirubin level [13].

A prospective study published by Dr Tarhany in Lorestan University, Iran, on 41 babies with hyperbilirubinemia who received camel's thorn, showed a significant difference for serum bilirubin values and hospitalization period compared with infants, who only received breast milk. This clinical trial showed that oral intake of camel's thorn in jaundiced infants (1 milliliter per kilogram of 30 percent solution every 12 hours for two days) did not reduce serum total bilirubin significantly [14]. Other publications by Panjvani et

al and Farhat et al reported, camel's thorn and flixweed intake in healthy newborns did not affect the course of hyperbilirubinemia [15,16]. Ancel et al reported that giving sugar water, was unsuccessful in preventing and managing of dehydration in newborns [17]. Carvalho et al reported that giving additional water to newborns did not have any effect on bilirubin values and duration of phototherapy [18]. Asefzadeh et al indicated that camel's thorn was prescribed commonly for treatment of the neonatal jaundice in villages around Qazvin, Iran [19].

One of limitations in current study was the lack of attention to complications related with traditional remedies intake like diarrhea which should be handled in future studies.

Conclusion

Our study found that receiving additional remedies like sugar water, camel's thorn and flixweed extracts by newborns can increase hyperbilirubinemia and delay the time of reexamination. In addition, more weight loss takes place; therefore in order to modify this culture, we should use all potentials of the society.

Acknowledgment

This study was kindly supported by vice-chancellor for research office, Mashhad University of Medical Sciences, Mashhad, Iran.

Conflict of Interest: None declared.

References

1. Bhutani VK. For a safer outcome with newborn jaundice. *Indian Pediatr* 2004;41(4):321-6.
2. Facchini FP, Mezzacappa MA, Rosa IR, et al. Follow-up of neonatal jaundice in term and late premature newborns. *J Pediatr (Rio J)* 2007; 83(4):313-22.

3. Luchman L, Wilson DB. The blood and hematopoietic system. In: Martin RJ, Fannaroff AA, Walsh MC. Fannaroff and Martin's Neonatal-Perinatal Medicine. 9th ed. Philadelphia: Mosby. 2011; Pp: 1318-9.
4. Boskabadi H, Maamouri G, Ebrahimi M, et al. Neonatal hypernatremia and dehydration in infants receiving inadequate breastfeeding. *Asia Pac J Clin Nutr* 2010; 19(3):301-7.
5. Agriculture Western Australia-Declared Plant Control Handbook. Weed name: camel's thorn (*Alhagi camelorum*). Recommended herbicides. Available at: <http://www.agric.wa.gov.au/progserv/Plants/weed-control/weeds/trees/camel'sthorn.htm>. Access date: May 2, 2010.
6. Non-cropland Weed Group, University of California Cooperative Extension Service, Weed Science. Program, Department of Vegetable Crops, University of California, Davis, Ca 95616. "Encyloweed" [online] Available at: <http://www.uapress.arizona.edu/online.bks/weeds/general.htm>. Access date: May 2, 2010.
7. Parker KF. An Illustrated Guide to Arizona Weeds. The University of Arizona Press. Available at: <http://www.uapress.arizona.edu/online.bks/weeds/general.htm>. Access date: May 2, 2010.
8. Racelis M. Progress report on the seminar on traditional practices affecting the health of women and children in Africa. Addis Ababa, Ethiopia: Health of Women and Children. 1987; Pp: 5-6.
9. Goldsmith JP. Delivery room resuscitation of the newborn. In: Martin RJ, Fannaroff AA, Walsh MC. Fannaroff and Martin's Neonatal-Perinatal Medicine. 9th ed. Philadelphia: Mosby, 2011; Pp: 456-7.
10. Boskabadi H. Breastfeeding Unique Jewel. 1st Ed. Mashhad: Ghaph Mashhadorreza. 2011; Pp: 128-31. (In Persian)
11. Mathew PM, Wharton BA. Investigation and management of neonatal jaundice; a problem-orientated case record. *Arch Dis Child* 1981; 56(12):949-53.
12. Kazerani H, Yousefi AR, Jamshidian M. Toxic effect of camel's thorn in Sourian rats. *J Semnan Med Uni* 2007;8(2):61-65. (In Persian)
13. Nabavizadeh H, Safari M, Khoshnevisan F. Evaluation of in vitro effectiveness of herbal medicine on serum bilirubin level. *Iran J Ped* 2006;15(2):133-8.
14. Tarhany F, Momennasab M, Delfan B, Zendekar A. Efficacy of camel's thorn in reducing newborn's physiologic hyperbilirubinemia. *J Lorestan Univ Med Sci* 2005; 22(2):55-8. (In Persian)
15. Panjvani Z, Kharrazi-Sabet H, Tawakkoli S. Is taranjebin a prophylactic agent for neonatal jaundice? *Med J Islam Repub Iran* 1995;9(1):27-32.
16. Farhat ASH, Mohammadzadeh A, Ramezani M, et al. The Effect of Shirkesht on Newborns' Indirect Hyperbilirubinemia. *J Iran University Med Sci* 2005;12(47):93-8. (In Persian)
17. Ansell C, Moore A, Barrie H. Electrolyte and pH changes in human milk. *Pediatr Res* 1977; 11(12):1177-9.
18. De Carvalho M, Hall M, Harvey D. Effects of water remedy on physiological jaundice in breast-fed babies. *Arch Dis Child* 1981;56(7):568-9.
19. Asefzadeh S, Taherkhani F, Ghodosian A. Traditional practices affecting maternal care in rural areas of Takistan: A qualitative study. *J Qazvin University Med Sci* 2003;7(4):36-43. (In Persian)