

Is Garlic Necklace Effective in the Treatment of Neonatal Jaundice

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ABSTRACT

Background: Hyperbilirubinemia is a prevalent clinical problem which affects 60% of term and 80% of preterm neonates. Garlic is the most well-known remedy used in Iraq for the treatment of jaundice. To test the effectiveness of garlic necklace in the treatment of neonatal jaundice.

Methods: This cohort study was conducted in the neonatal intensive care unit (NICU) of Al Zahraa Teaching Hospital within January-November 2016. A total number of 110 neonates were included in the present study out of whom 36 neonates were allocated to the test group and 74 newborns were assigned to the control group. The neonates in both groups received the common treatment of jaundice, according to guidelines adopted in our hospital. Nonetheless, the neonates in the test group wear a seven-clove garlic necklace till discharge, in addition to the common treatment. We compared the two groups regarding the length of hospital stay and the rate of total serum bilirubin (TSB) decline.

Results: As illustrated by the obtained results, a significant reduction was detected in the hours of hospitalization in the control group, as compared to the test group ($P=0.006$).

A significant reduction was observed in hours of hospitalization in the control group, as compared to the test group ($P=0.006$) suggesting the harmful effect of garlic on neonatal jaundice. This can be attributed to the long-time dependence of patients' families on garlic as a sole treatment before seeking medical help. Nonetheless, this treatment made jaundice worse needing prolonged phototherapy. The rate of decline in TSB in hospitalized patients was comparable in both groups ($P=85$). This again suggests that garlic has no beneficial effect on the treatment of neonatal jaundice.

Conclusion: Based on the results of the present study, garlic has no effect on the treatment of neonatal jaundice, rather it may cause prolonged phototherapy and hospital stay.

Keywords: Garlic, Neonatal jaundice, Remedies

Introduction

Hyperbilirubinemia is a prevalent problem which occurs in 60% of term and 80% of preterm neonates (1). It results from red blood cell and hemoglobin break down which leads to the formation of unconjugated bilirubin (2). The liver conjugates unconjugated bilirubin making it water-soluble which can be easily eliminated by defecation (3). Although bilirubin may have a physiologic role as an antioxidant, the elevation of indirect unconjugated bilirubin is potentially neurotoxic (kernicterus) (1).

Most neonates experience lag time before their livers can effectively begin conjugating bilirubin;

therefore, they may manifest a transient condition known as physiologic jaundice (2). Whatever the cause, the treatment aims to protect the brain from neurotoxicity related to indirect bilirubin. Phototherapy and if unsuccessful exchange transfusion have remained the primary treatment modalities used to keep the maximal total serum bilirubin below pathologic levels (1).

The traditional treatment of neonatal jaundice could potentially delay seeking medical care and contribute to serious complications (4). A lot of traditional treatment modalities have been used in Iraq for the treatment of neonatal jaundice the

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most famous of which is garlic. Mothers make a necklace with seven cloves of garlic and remove one clove each day till the 7th day of life. They believe that it is a reliable non-medical treatment for neonatal jaundice since it turns yellow by draining jaundice from the baby.

The present study aimed to test the effectiveness of garlic necklace in the treatment of neonatal jaundice.

Methods

This cohort study was conducted in the NICU

of Al Zahraa Teaching Hospital within January-November 2016. A total number of 110 neonates with jaundice of unconjugated type were included in the study. The algorithm depicted in Figure 1 was used as a guideline for the diagnosis of causes of jaundice. Information was collected about their gender, gestational age, chronological age, weight, cause of jaundice, TSB (on admission and after each 12 h till discharge), treatment of jaundice (ordinary phototherapy, intensive phototherapy, and exchange transfusion), blood group, and Rh.

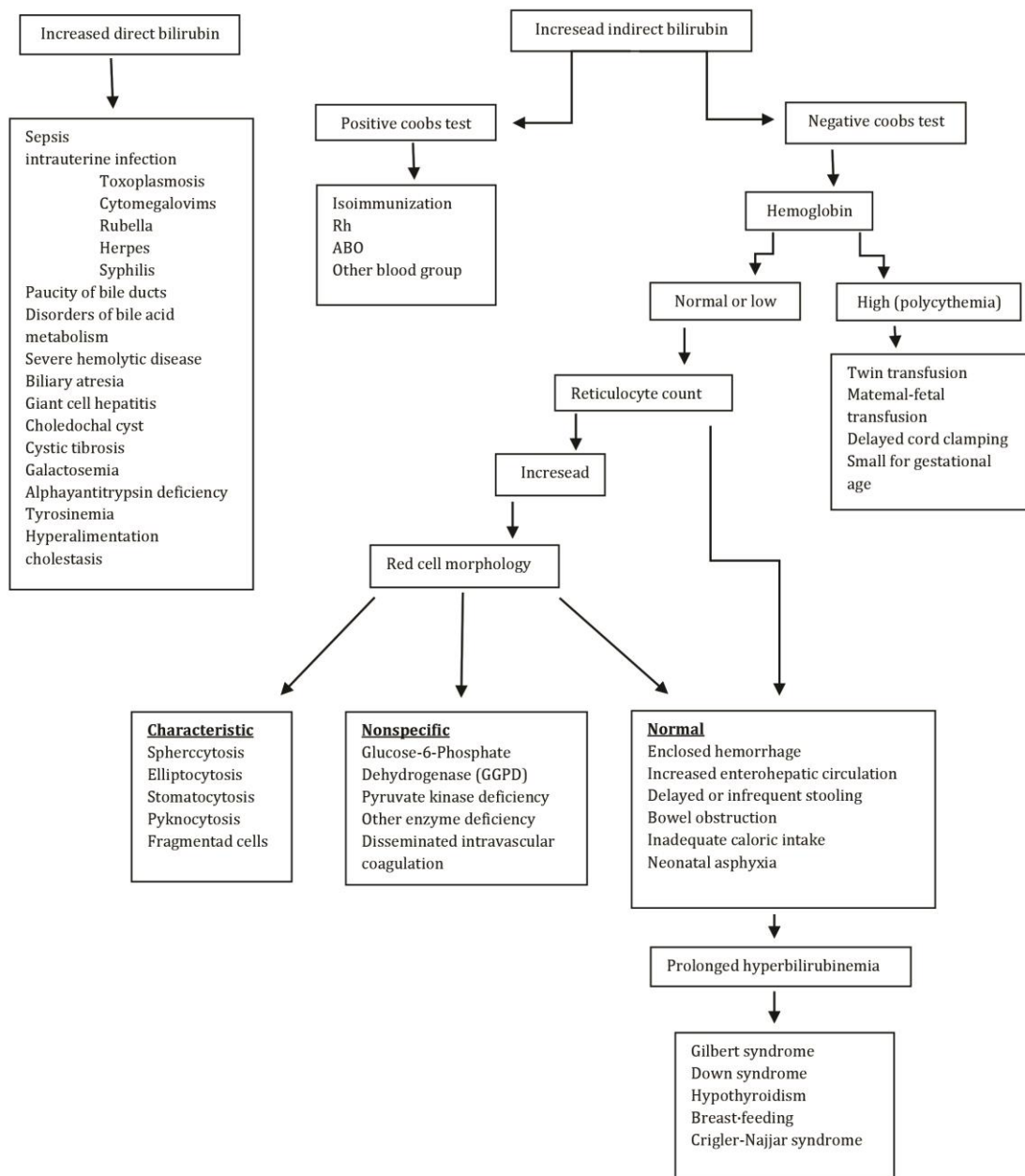
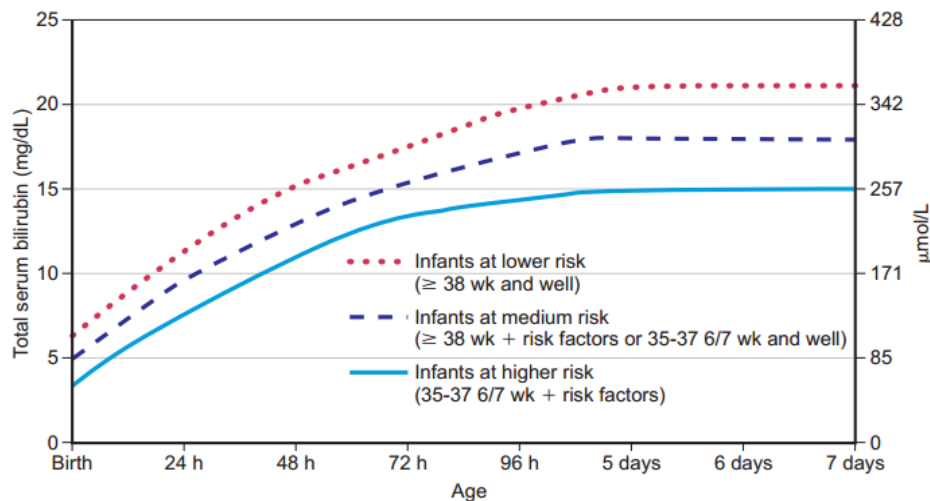
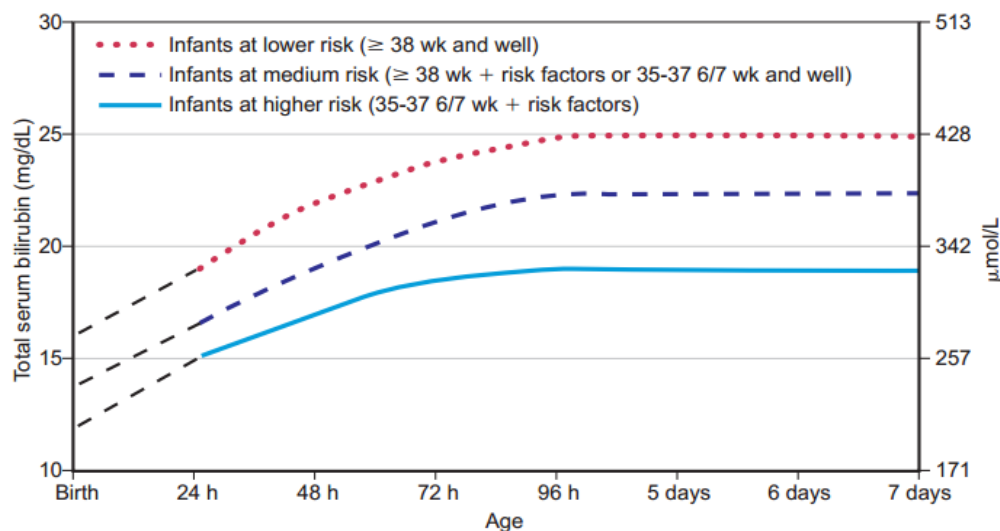


Figure 1. Schematic approach to the diagnosis of neonatal jaundice (5)



- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.
- Risk factors = isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis, or albumin < 3.0 g/dL (if measured).
- For well infants 35-37 6/7 wk can adjust TSB levels for intervention around the medium risk line. It is an option to intervene at lower TSB levels for infants closer to 35 wks and at higher TSB levels for those closer to 37 6/7 wk.
- It is an option to provide conventional phototherapy in hospital or at home at TSB levels 2-3 mg/dL (35-50 μmol/L) below those shown, but home phototherapy should not be used in any infant with risk factors.

Figure 2. Guidelines for phototherapy in hospitalized neonates of ≥35 weeks of gestation (6)



- The dashed lines for the first 24 hours indicate uncertainty due to a wide range of clinical circumstances and a range of responses to phototherapy.
- Immediate exchange transfusion is recommended if infant shows signs of acute bilirubin encephalopathy (hypertonia, arching, retrocollis, opisthotonos, fever, high pitched cry) or if TSB is ≥ 5 mg/dL (85 μmol/L) above these lines.
- Risk factors = isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis.
- Measure serum albumin and calculate B/A ratio.
- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.
- If infant is well and 35-37 6/7 wk (median risk), can individualize TSB levels for exchange based on actual gestational age.

Figure 3. Guidelines for exchange transfusion in hospitalized neonates of ≥35 weeks of gestation (6)

Out of these 110 neonates, 36 cases were allocated to the test group, and 74 newborns were assigned to the control group. The neonates in both groups received ordinary treatment of jaundice, according to guidelines adopted in our

hospital. Nonetheless, the neonates in the test group wear a seven-clove garlic necklace till discharge, in addition to the common treatment.

The two groups were compared regarding the length of hospital stay and the rate of TSB decline.

All of the patients underwent a TSB test during the admission period every 12 h. The blood was collected by a capillary tube; thereafter, the serum was separated by centrifuge. In the TSB test, spectrophotometry is used to identify and quantify the amount of bilirubin in a specific amount of serum by measuring the amount of ultraviolet light absorbed by bilirubin pigment in the sample. This test requires only a small

amount of blood, it can be performed in a few minutes, and it yields precise results.

Results

A total number of 110 neonates with jaundice were included in the current study. The Test group consisted of 36 neonates, and the control group included 74 neonates. For both groups we collected the following data:

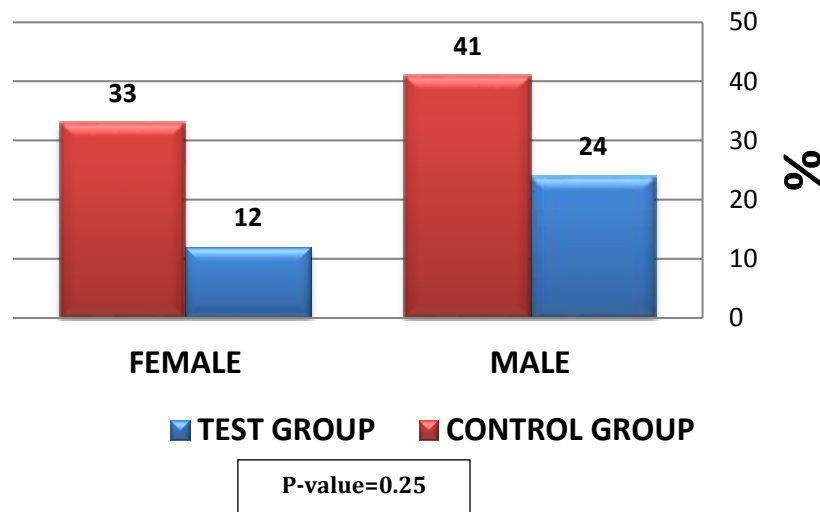


Figure 4. Sex distribution of test and control groups

Table 1. Comparison between test and control groups with regards to gestational age, age and weight

	TEST GROUP (mean±SD)	CONTROL GROUP (mean±SD)	P-value
Gestational age (week)	36.25±1.2	36.6±1.3	0.23
Age(day)	5.2±3.3	4.7±3.6	0.52
Weight(kg)	2.8±0.5	3±0.6	0.06

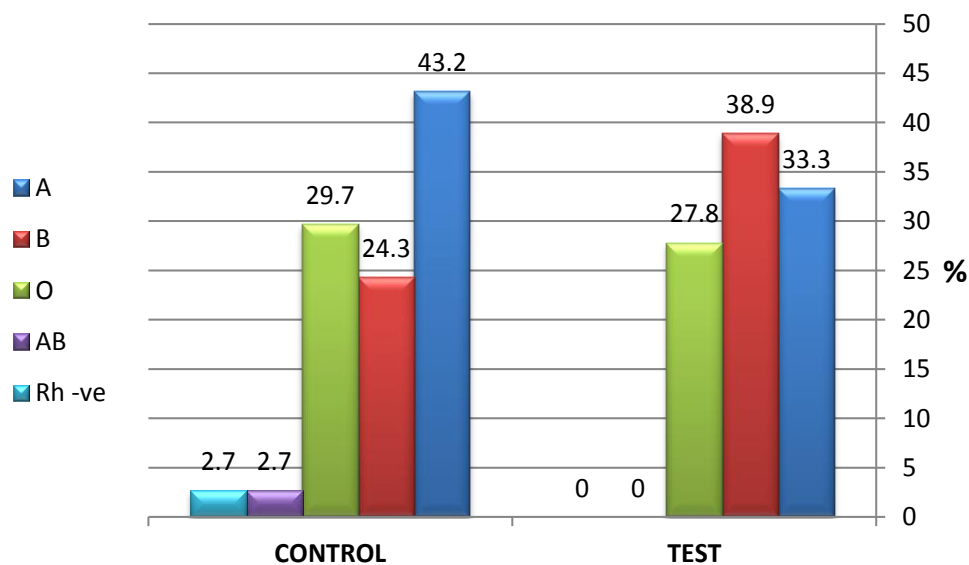


Figure 5. Blood group and Rh distribution between test and control groups

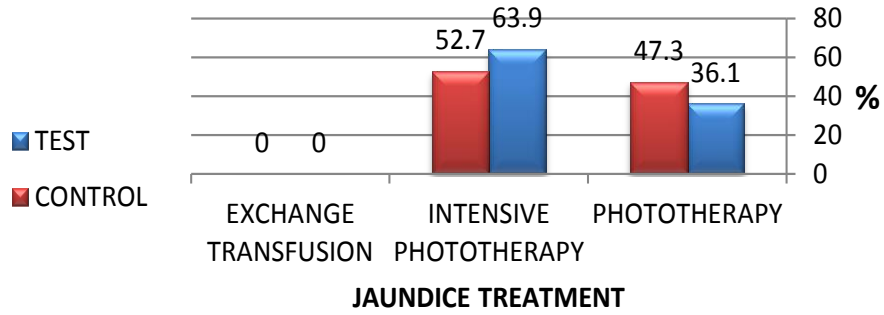


Figure 6. Types jaundice treatment modality used for test and control groups

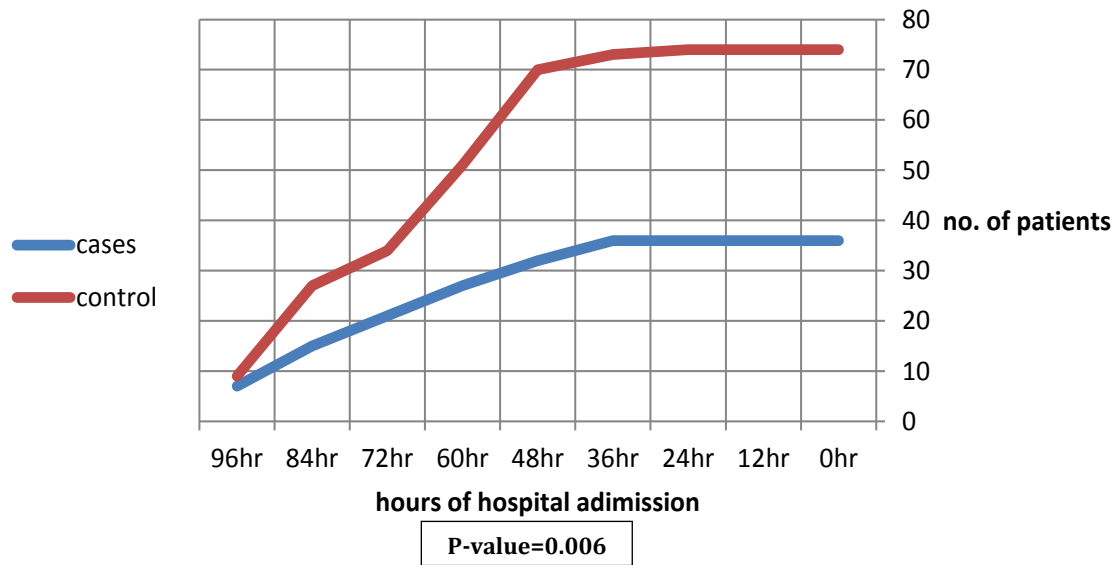


Figure 7. Comparison between test and control group with regard to number of hospitalized jaundice patients and number of hours spent in hospital for their treatment

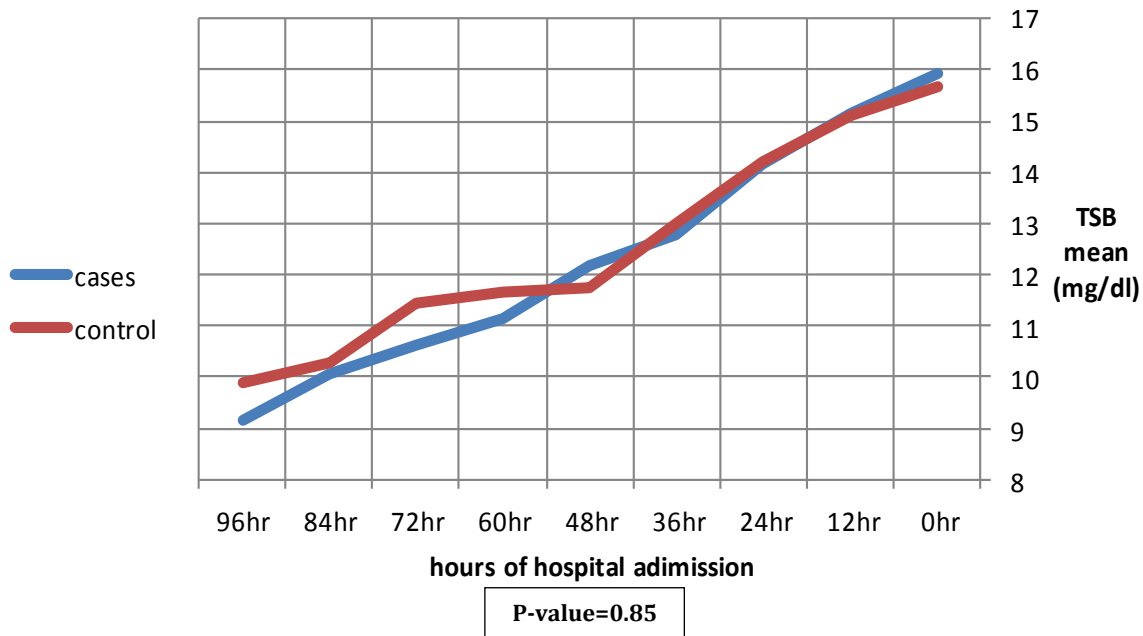


Figure 8. Comparison between test and control group with regards to TSB drop during hours of hospital admission

Discussion

Rural Iraqi society has remained intact in beliefs and practices in many ways since the Babylonian and Sumerian eras over four millennia ago (7). Myths about illnesses and their treatment may lead to adverse consequences, especially in disease, such as neonatal jaundice. Many rural people have tried traditional therapies for jaundice the most famous of which is garlic. Nonetheless, many pediatricians do not accept garlic treatment without a scientific base. The current study aimed to prove or to rule out the effect of garlic on the treatment of neonatal jaundice.

In both groups, no significant difference was detected regarding the demographic characteristics, except for weight which was higher for the control group (3 ± 0.6), as compared to the test group (2.8 ± 0.5) ($P=0.06$).

In addition, a significant reduction was observed in hours of hospitalization in the control group, as compared to the test group ($P=0.006$) signifying the harmful effect of garlic on neonatal jaundice. This can be attributed to the long-time dependence of patients' families on garlic as a sole treatment before seeking medical help. Nonetheless, this treatment made jaundice worse needing prolonged phototherapy. The mean TSB on admission was 15.5 mg/dl for the control group, while it was reported as 16 mg/dl and for the test group. However, this difference was not statistically significant. Moreover, the mean of patients' age on admission was higher for the test group (5.2 days), as compared to the control group (4.7 days); nonetheless, this difference was not statistically significant ($P=0.52$).

However; the rate of decline in TSB in hospitalized patients was comparable in both groups ($P=85$). This again confirms that garlic exerts no beneficial effect on the treatment of neonatal jaundice.

Conclusion

As evidenced by the obtained results, garlic has no effect on the treatment of neonatal jaundice,

rather it may prolong phototherapy and hospital admission.

Recommendations

1. We recommend that pediatricians and media try to change the common beliefs about the traditional treatment, especially garlic for neonatal jaundice.
2. Other traditional treatments should be also studied, such as amber stone and hinah.

Acknowledgments

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Conflicts of interest

The authors declare no conflict of interest.

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