

Clinical observation of traditional Chinese medicine bath on neonatal jaundice

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Abstract: *Objective: To explore the clinical effect of traditional Chinese medicine bath on neonatal jaundice. Methods: 74 cases of neonatal jaundice treated in our hospital from February 2021 to October 2021 were randomly divided into control group and experimental group. They were treated with blue light irradiation and blue light irradiation + traditional Chinese medicine bath. The effective rate of clinical treatment, the improvement time of disease symptoms, the change of jaundice index, the level of serum bilirubin and adverse reactions were compared. Results: the effective rate of 97.30% in the experimental group was significantly higher than 81.08% in the control group ($P < 0.05$). The regression time of skin yellow stain and sclera yellow stain in the experimental group was shorter than that in the control group, the time of fetal stool turning yellow was shorter than that in the control group, and the hospital stay was shorter than that in the control group ($P < 0.05$). Before treatment, there was no significant difference in jaundice index between the two groups ($P > 0.05$). After treatment, the jaundice index of the two groups was significantly higher than that before treatment, and the experimental group was higher than that of the control group ($P < 0.05$). Before treatment, there was no significant difference in the levels of total bilirubin, direct bilirubin and indirect bilirubin between the two groups ($P > 0.05$). After treatment, the total bilirubin level, direct bilirubin level and indirect bilirubin level of the two groups were significantly lower than those before treatment, and the level of the experimental group was lower than that of the control group ($P < 0.05$). The incidence of adverse reactions in the treatment group was lower than that in the control group ($P > 0.05$). Conclusion: the therapeutic scheme of traditional Chinese medicine bath for neonatal jaundice has definite clinical effect and should be popularized in clinic.*

Keywords: Neonatal Jaundice, Traditional Chinese Medicine Bath, Blue Light Irradiation, Bilirubin, Adverse Reaction

1. Introduction

Neonatal jaundice is a common and frequently occurring disease of newborns characterized by yellow skin and sclera, which has a serious impact on the health and normal development of newborns. In severe cases, it can damage nerves and do great harm [1]. Some studies have pointed out that [2], most children with neonatal jaundice can subside by themselves, and a few need treatment. They can be cured after standard treatment, and the prognosis is good. The main cause of neonatal jaundice is the abnormal metabolism of bilirubin, which far exceeds the metabolic capacity of human body, resulting in the accumulation of bilirubin in the body. Neonatal jaundice includes two types: pathological jaundice and physiological jaundice [3]. Usually, physiological jaundice can basically subside after a few days. Pathological jaundice generally needs to be treated according to the condition. The clinical treatment of pathological jaundice is mainly phototherapy, and drugs and blood exchange can also be used [4]. Because newborns are young, sensitive to drug stimulation and unable to tolerate blood exchange, phototherapy is the first choice. Blue light irradiation scheme can promote the excretion of bilirubin in children. Continuous irradiation is needed and the changes of serum bilirubin level are closely monitored [5]. Blue light irradiation can cause children's fever, rash, diarrhea and other adverse reactions, so clinical care and life care need to be strengthened [6]. Traditional Chinese medicine bath has good application in the treatment of neonatal jaundice. It can be used as an adjuvant treatment scheme to reduce the number and time of blue light irradiation, reduce side effects and improve the treatment effect [7]. In this study, 74 children with neonatal jaundice treated in our hospital from February 2021 to October 2021 were divided into groups to explore the clinical effect of traditional Chinese medicine bath on neonatal jaundice. The report is as follows.

2. Data and methods

2.1. General information

74 cases of neonatal jaundice were selected as the research object. The cases were selected from February 2021 to October 2021. They were divided into control group and experimental group. 37 cases in the experimental group, 19 males and 18 females; The average age was (6.45 ± 1.02) days; The birth weight was 2500-3867g, with an average of (3364.45 ± 202.15) g; Condition: mild 25 cases, moderate 12 cases. 37 cases in the control group, 18 males and 19 females; The average age was (6.53 ± 1.04) d; The birth weight was 2509-3870g, with an average of (3370.50 ± 204.20) g; Condition: mild 23 cases, moderate 14 cases. There was no significant difference between the two groups ($P > 0.05$). Comparable. The family members of the two groups were aware of the method and purpose of this study and volunteered to participate. The study was approved by the medical ethics committee.

Inclusion criteria: ① meet the diagnostic criteria for neonatal jaundice in Practical Pediatrics [8]; ② All were pathological jaundice; ③ Stable condition; ④ Day age $< 20d$; Exclusion criteria: ① intolerance to blue light irradiation; ② Traditional Chinese medicine bath intolerance; ③ Congenital malformation; ④ Allergic constitution; ⑤ Complicated with systemic infection.

2.2. Method

2.2.1. control group

The children were treated with blue light irradiation. Use syl68yxk blue light treatment box (manufacturer: Ningbo David Medical Devices Co., Ltd.). Conduct a comprehensive physical examination of the children, observe the yellow staining of skin and sclera, and diagnose the children. Carry out blood test for the children, measure the level of bilirubin and make records. Inform the children's family members of their condition in detail, introduce the treatment plan, explain the role, operation, risks, precautions and expenses of blue light irradiation therapy, and obtain the consent of the children's family members. Put the child into the blue light treatment box and cover his eyes, anus and perineum with black cloth. Adjust the blue light wavelength 420-480nm, and set the light radiation value to $> 600W / cm^2$. The children were irradiated for 10-12 hours every day for 5 days.

2.2.2. Test group

The experimental group treated the children with traditional Chinese medicine bath on the basis of blue light irradiation. The instruments and equipment used in blue light irradiation were the same as those in the control group. The irradiation method is the same. The daily irradiation time of children was adjusted to 8-10h. Prescription of traditional Chinese medicine bath: raw Astragalus 20g, raw earth 12g, Herba Artemisiae 10g, gardenia 15g, Coptis 10g, gentian 10g, plantain 20g, chicken inner gold 10g, mulberry leaf 10g and papaya 10g. The prescription is prepared by the traditional Chinese medicine prescription of our hospital and prepared as a medicine bath bag. 16: 00 pairs of children were fed, and the traditional Chinese medicine bath was started 1 hour after feeding. Adjust the temperature of traditional Chinese medicine bathroom in the hospital to 26-30 °C. Add an appropriate amount of water (about 8000-10000ml) into the special clean medicine bath bucket and put it into the traditional Chinese medicine bath bag. Measure with a thermometer. When the water temperature drops to 37-38 °C, put the child into the medicine bath bucket. Once a day, 15 minutes each time, for 5 days. In the process of traditional Chinese medicine bath, massage the child's head, chest, back and limbs with slow movement and light intensity.

2.3. Observation indicators

The effective rate of clinical treatment, the improvement time of disease symptoms, the change of jaundice index, the level of serum bilirubin and adverse reactions were compared between the two groups. Evaluation criteria of each index:

① effective rate of clinical treatment: score the skin yellow stain and scleral yellow stain of children with TCM syndrome score, with 0, 2, 4 and 6 respectively representing asymptomatic, mild, moderate and severe. Compared with before treatment, after treatment, children with TCM syndrome score reduction rate of more than 75% are cured, 50-75% are significantly effective, 30-50% are effective, and less than 30% are ineffective. Effective rate of clinical treatment = (number of cured

cases + number of markedly effective cases + number of effective cases) / total number of cases × 100%.

② Symptom improvement time: record the regression time of skin yellow stain, sclera yellow stain, fetal stool yellowing time and hospitalization time of the two groups for comparison between the two groups.

③ Jaundice index: detect the forehead, face and chest of children with percutaneous jaundice tester before and after treatment to obtain the jaundice index. After three measurements, the average value was taken for comparison between groups.

④ Serum bilirubin level: the serum total bilirubin level, direct bilirubin level and indirect bilirubin level of children were measured before and after treatment. The blood of children was collected by intravenous centrifugation for 3ml / min. The bilirubin level was measured by Olympus AU640 whole uterus biochemical analyzer.

⑤ Adverse reactions: fever, rash, diarrhea.

2.4. Statistical treatment

The data were obtained by spss25 0 software for statistical analysis, ($\pm s$) indicates that it conforms to the measurement data of normal distribution, and t-test is carried out; [n (%) χ^2 test, $P < 0.05$, the difference was statistically significant.

3. Results

3.1. Comparison of clinical treatment effectiveness between the two groups

Compared with the control group, the effective rate of clinical treatment in the experimental group was higher, and the difference was statistically significant ($P < 0.05$). See Table 1.

Table 1: Comparison of clinical treatment effectiveness between the two groups [n (%)]

group	recovery	Remarkable effect	Effective	invalid	Efficient
Test group (n = 37)	22(59.46)	10(27.03)	4(10.81)	1(2.70)	36(97.30)
Control group (n = 37)	18(48.65)	7(18.92)	5(13.51)	7(18.92)	30(81.08)
χ^2	-	-	-	-	5.045
P	-	-	-	-	0.025

3.2. Comparison of symptom improvement time between the two groups

After treatment, compared with the control group, the regression time of skin yellow stain, sclera yellow stain, fetal stool yellowing time and hospital stay in the experimental group were significantly shorter ($P < 0.05$). See Table 2.

Table 2: Comparison of symptom improvement time between the two groups ($\pm s, d$)

group	Skin yellowing regression time	Regression time of scleral yellow stain	Yellowing time of fetal stool	Length of stay
Test group (n = 37)	2.02 \pm 0.34	2.01 \pm 0.29	1.02 \pm 0.15	4.12 \pm 0.45
Control group (n = 37)	3.54 \pm 0.54	3.64 \pm 0.55	1.75 \pm 0.16	6.34 \pm 1.02
χ^2	14.489	15.946	20.247	12.113
P	0.000	0.000	0.000	0.000

3.3. Comparison of jaundice index between the two groups

Before treatment, there was no significant difference in jaundice index between the experimental group and the control group ($P > 0.05$). After treatment, the jaundice index of the two groups was significantly lower than that before treatment ($P < 0.05$). After treatment, the jaundice index in the experimental group was significantly lower than that in the control group ($P < 0.05$). See Table 3.

Table 3: Comparison of jaundice index between the two groups ($\pm s$, mg / dl)

group	Before treatment	After treatment	t	P
Test group (n = 37)	168.45 \pm 25.45	50.45 \pm 10.15	26.196	0.000
Control group (n = 37)	169.51 \pm 25.33	80.36 \pm 15.36	18.306	0.000
χ^2	0.180	9.882	-	-
P	0.858	0.000	-	-

3.4. Comparison of serum bilirubin levels between the two groups

There was no significant difference in the levels of total bilirubin, direct bilirubin and indirect bilirubin between the two groups before treatment ($P > 0.05$). After treatment, the levels of total bilirubin, direct bilirubin and indirect bilirubin in the two groups were significantly lower than those before treatment ($P < 0.05$). After treatment, the levels of total bilirubin, direct bilirubin and indirect bilirubin in the experimental group were lower than those in the control group ($P < 0.05$). See Table 4.

Table 4: Comparison of serum bilirubin levels between the two groups ($\pm s$, μ mol/L)

group	fever	rash	diarrhea
Test group (n = 37)	1(2.70)	1(2.70)	1(2.70)
Control group (n = 37)	2(5.41)	3(8.11)	2(5.41)
χ^2	0.347	1.057	0.347
P	0.556	0.304	0.556

4. Conclusions

Neonatal jaundice is a common disease in neonatal period, including physiological and pathological. Physiological jaundice is that the total amount of bilirubin produced in the body after birth is greater than the excretion of bilirubin [9]. Pathological jaundice is mainly caused by excessive bilirubin production and metabolic disorders. Related diseases include neonatal erythrocytosis, neonatal sepsis and neonatal hemolysis, which have a direct impact on the healthy growth of newborns [10]. Therefore, in order to ensure the health of newborns and promote the healthy growth of newborns, it is necessary to treat jaundice that cannot subside by itself. At present, the preferred clinical scheme is blue light irradiation therapy, which has achieved certain curative effect. However, blue light irradiation therapy generally requires more than 10 days of irradiation every day, while newborns have delicate skin and are sensitive to light, which may cause skin rash and adverse reactions. And prone to high fever and diarrhea [11]. Therefore, during the treatment of neonatal jaundice, it is necessary to explore a safer and reliable scheme to improve the treatment effect and reduce the side effects on children [12]. At present, the clinical research and clinical trial of traditional Chinese medicine in the treatment of neonatal jaundice have been carried out, which has achieved good results and improved the treatment effect to a certain extent. However, at present, the principle exploration and effect analysis of traditional Chinese medicine treatment scheme for neonatal jaundice at home and abroad are relatively few, and there is a lack of clinical evidence to support it. It limits the application and popularization of traditional Chinese medicine in the treatment of neonatal jaundice.

Neonatal jaundice belongs to the category of "fetal yellow" in the theory of traditional Chinese medicine. The etiology is maternal spleen deficiency, invasion of damp heat evil gas and fumigation in the fetus [13]. It may also be that the newborn is invaded by damp heat evil gas after birth, fumigating the liver, causing bile overflow and yellow staining. Therefore, when treating neonatal jaundice, the methods of clearing heat and promoting dampness, promoting gallbladder and eliminating jaundice can be adopted [14]. According to the physiological characteristics of newborns, this study selected the traditional Chinese medicine bath scheme to treat children, combined with blue light irradiation, and achieved ideal therapeutic effect. The results showed that the experimental group shortened the treatment time of blue light irradiation and added the treatment scheme of traditional Chinese medicine bath [15]. The control group only received blue light irradiation. After treatment, the effective rate of the experimental group was significantly higher than that of the control group, the regression time of jaundice symptoms was short, the level of serum bilirubin was low, and the adverse reactions were less. The reason for analysis is: the wavelength of 420-480nm is used to irradiate the children. Bilirubin has a good absorption effect on blue light, which makes bilirubin change into isomers and turns the fat soluble characteristics of bilirubin into water-soluble, so that it is excreted from the body through bile or urine without the combination of liver [16]. However, blue light irradiation can have a certain impact

on children, which is easy to cause adverse reactions such as rash. At the same time, the blue light irradiation time is long and the nursing is difficult. The use of traditional Chinese medicine bath can reduce the time of blue light irradiation, reduce the radiation damage to children and reduce the incidence of adverse reactions [17]. Astragalus membranaceus in traditional Chinese medicine bath prescription has the effects of purging fire, clearing heat and detoxifying. It can clear away heat and cool blood, nourish yin and generate fluid. Herba Artemisiae clearing dampness and heat, promoting gallbladder and eliminating jaundice. Gardenia can relieve fire and annoyance, clear away heat and dampness, cool blood and detoxify. Coptis chinensis clearing heat and dampness, purging fire and detoxifying. Gentian herb can clear away heat and dry dampness, relieve liver and gallbladder fire. Plantain clearing heat, diuresis, dredging and drenching, seeping dampness and stopping diarrhea. Jineijin is good for stomach and digestion. Mulberry leaves disperse wind heat, calm the liver and brighten the eyes. Papaya can protect liver and resist bacteria. The combined use of drugs helps to promote the gallbladder, eliminate jaundice, clear away heat and dampness. Traditional Chinese medicine bath is simple to operate, does not need to use special instruments and equipment, medicinal materials are common, and the treatment cost is low. Soaking the children in the medicine bath bucket can make a large area of contact with the medicine liquid. Fumigating the children with the cleaning force of the medicine liquid and warm steam can open the pores on the skin surface of the children and promote the penetration of the medicine liquid. In addition, the traditional Chinese medicine bath scheme can promote the blood circulation of the body, improve metabolism, accelerate the absorption of drugs, and play the role of internal and external therapy. At the same time, traditional Chinese medicine bath can ensure the comfort of newborns, and the treatment process is short and easy to be accepted. The combination of blue light irradiation therapy and traditional Chinese medicine bath can treat and intervene the symptoms of jaundice in children from different action principles, which can quickly subside the symptoms and accelerate the excretion of bilirubin in newborns. However, it should be noted that in the process of traditional Chinese medicine bath treatment for newborns, the water temperature needs to be controlled at 37-38 °C, which is suitable for neonatal tolerance and comfort. Because the newborn's skin is delicate and sensitive to water temperature, it is easy to scald if the temperature is too high.

In this study, the clinical effect of the experimental group was better than that of the control group. The disappearance time of jaundice symptoms and hospital stay in the experimental group were shorter than those in the control group. Before treatment, the jaundice index of the two groups was equivalent to the level of serum bilirubin. After treatment, the jaundice index and serum bilirubin level of the two groups were significantly improved compared with those before treatment, and the improvement of the experimental group was better than that of the control group. The incidence of adverse reactions in the experimental group was lower than that in the control group. The results show that the use of traditional Chinese medicine bath in the adjuvant treatment of neonatal jaundice can obtain ideal therapeutic effect, promote the rapid disappearance and remission of disease symptoms, accelerate the excretion of bilirubin, have high therapeutic value and good safety.

In conclusion, traditional Chinese medicine bath in the treatment of neonatal jaundice has high clinical value and should be popularized.

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