The Effect of Oil Massage on Serum Bilirubin Levels in Full Term Neonates with Hyperbilirubinemia: A Randomized Controlled Trial

Thesis

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List of Abbreviations

Abb.	Full term

AAP ..... *American Academy of Pediatrics.*
AR ..... *Autosomal recessive.*
BBS ..... *Bronze baby syndrome.*
BIND ..... *Bilirubin-induced neurological dysfunction.*
BMJ ..... *Breast milk jaundice.*
CN ..... *Criggler-Najjar.*
CO ..... *Carbon monoxide.*
GMP ..... *Glucose mono-phosphate.*
GS ..... *Gilbert syndrome.*
IGF-1 ..... *Insulin growth factor-1.*
LED ..... *Light Emitting Diodes.*
NK ..... *Natural killer cells.*
PT ..... *Phototherapy.*
RES ..... *Reticulo endothelial system.*
SGA ..... *Small for gestational age.*
SMA ..... *superior mesenteric artery.*
TcB ..... *Transcutaneous bilirubin.*
Th ..... *T helper cell.*
TSB ..... *Total serum bilirubin.*
UDPGTA1 ..... *Uridine diphosphoglucuronyl transferase A1.*
WGTT ..... *Whole Gut Transit Time.*

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Abstract

Laboratory investigations were done for all cases and they included: TSB and DSB (at admission & daily till discharge), complete blood count with reticulocytic count, maternal & neonatal blood group& Rh, direct coomb's test and CRP.

Whole gut transit time was measured for all cases. WGTT is defined as the elapsed time between carmine red dye administration (as a marker) and its first appearance in the faeces. Carmine red (125 mg) was given immediately after a feed. At each subsequent diaper change, stool was inspected for the dye.

For neonates in the massage group with phototherapy, massage was done twice daily, 1hour after the morning and midday feed for 15-20 minutes, from first day of admission till discharge. Massage was done at a room temperature maintained between 24-28℃.

Keywords: Hyperbilirubinemia- Full Term Neonates- Massage on Serum Bilirubin Levels

INTRODUCTION

Neonatal jaundice is a condition in which an infant's skin, sclera and mucous membranes appear yellow within the first month of life after birth due to increased level of bilirubin in blood. It occurs in about 2/3 of all healthy newborn ***(Rob and Watson, 2009).***

Hyperbilirubinemia is a frequent cause of recurrent hospitalization in the neonatal period ***(Escobar et al., 2005)*** and although this condition is short-lived, it is the reason for 75% of hospitalizations occurring within the first weeks after birth ***(Barbara, 2008) (a).***

Hyperbilirubinemia can cause transient, reversible encephalopathy and if bilirubin levels are not controlled, kernicterus can occur resulting in central nervous system dysfunctions and possible death ***(Steffensrud, 2004)***. Even though suitable therapy can prevent brain damage in infants, procedures aiding a speedy recovery are constantly being evaluated ***(Valaes et al., 1996).*** Available treatment of jaundice is phototherapy, exchange transfusion.

Phototherapy is the common treatment used for increased hyperbilirubinemia, however it has various side effects such as hyperthermia, watery diarrhea, increased insensible water loss, dehydration, skin rashes, bronze baby syndrome and damage to retina and genitals. There is also controversy surrounding whether phototherapy may increase the risk of developing

melanoma later in life ***(Matichard et al., 2006).*** Thus, finding solutions for the reduction of the time of phototherapy or finding alternate treatment has always been a matter of consideration ***(Barbara, 2008) (b)***.

Baby massage is a traditional practice in many areas of the world, especially in the African and Asian continents and the former Soviet Union. Many studies have demonstrated the beneficial effect of baby massage for neonatal physical development such as weight, length, head circumference, bone mineral density, sleep duration, respiration and the elimination and reduction of colic and wind ***(Field, 2002; Field et al., 2010)***. Baby massage is also thought to reduce infant stress ***(Underdown et al., 2006; Hernandez-Reif et al., 2007).***

It was reported that baby massage can stimulate parasympathetic and vagal activity resulting in a gastrointestinal tract response. It accelerates peristalsis by changing inta-abdominal pressure and creating a mechanical and reflexive effect on the intestines, decreasing abdominal distension and increasing intestinal movements. This mechanism causes a significant decrease in enterohepatic circulation ***(Tekgunduz et al., 2014; Diego et al., 2014).***

It is suggested that baby massage would promote early stage defecation of neonates, which may accelerate bilirubin excretion with the possibility of reducing neonatal jaundice ***(Chen et al., 2011).***

Aim of the Work

The aim of this study was to determine the effect of oil massage on serum bilirubin level in full term infants with hyperbilirubinemia when combined with phototherapy versus phototherapy alone.

Chapter 1

NEONATAL JAUNDICE

Definition:

Neonatal jaundice is yellowish discolouration of an infant's skin and mucous membranes within the first month of life due to the accumulation of bilirubin. Neonatal jaundice occurs in about 2/3 of all healthy newborns ***(Rob and Watsaon, 2009).***

Jaundice is the visible manifestation in the skin if elevated serum concentrations of bilirubin. Although most adults are jaundiced when total serum bilirubin (TSB) level exceeds 2.0 mg/dL, neonates characteristically do not appear jaundiced until the TSB exceeds 5.0 to 7.0 mg/dL ***(Watchko, 2012).***

The yellow color usually results from the accumulation of unconjugated, nonpolar, lipid-soluble bilirubin pigment in the skin. This unconjugated bilirubin is an end product of hemeprotein catabolism from a series of enzymatic reactions. It may also be due in part to deposition of pigment from conjugated bilirubin, the end product from indirect, unconjugated bilirubin that has undergone conjugation in the liver cell to form the polar, water-soluble glucuronide of bilirubin ***(Ambalavanan and Carlo, 2011).***

Neonatal hyperbilirubinemia can be associated with severe illnesses such as hemolytic disease, infections, metabolic and endocrine disorders or anatomic abnormalities in the liver ***(Balistreri, 2004).***