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Nurses Role In Phototherapy

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Abstract
Phototherapy, a treatment for newborn hyperbilirubinemia, involves transferring unconjugated bilirubin from the skin to a water-soluble form (lumirubin) in urine. This medication is both safe and effective, minimizing the need for exchange transfusions. Nurses play an important part in phototherapy by monitoring and evaluating the baby's bilirubin levels, skin color, and overall health. They guarantee that the baby's eyes are protected and equally exposed to light, as well as providing skin care to prevent irritation. Nurses also aid with the baby's feeding schedule, providing sufficient nourishment and doing regular weight checks to maintain general health.
Key Words: *Jaundice, Bilirubin, Hyperbilirubinaemia, Kernicterus*

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I. Introduction

Phototherapy has been used since 1958 for the treatment of neonatal hyperbilirubinaemia. It causes unconjugated bilirubin to be mobilised from the skin by structural isomerisation to a water soluble form (lumirubin) that can be excreted in the urine. The aim of phototherapy is to decrease the level of unconjugated bilirubin in order to prevent acute bilirubin encephalopathy, hearing loss and kernicterus. Lamps emitting light between the wavelengths of 400 - 500 nanometres (peak at 460nm) ar specifically administering phototherapy used for as bilirubin absorbs this wavelength of light. The light is visible blue light and contains no ultraviolet light.Phototherapy is the use of visible light to treat severe jaundice in the neonatal period. Approximately 60% of term babies and 85% preterm babies will develop clinically apparent jaundice, which classically becomes visible on day 3, peaks days 5-7 and resolves by 14 days of age in a term infant and by 21 days in the preterm infant. Treatment with phototherapy is implemented in order to prevent the neurotoxic effects of high serum unconjugated bilirubin. Phototherapy is a safe, effective method for decreasing or preventing the rise of serum unconjugated bilirubin levels and reduces the need for exchange transfusion in neonates. Nurses play an important role in phototherapy treatment by monitoring and assessing a baby's bilirubin levels, skin color, and overall health. They cover the baby's eyes, make sure the skin is exposed to light equally, and feel for pressure spots or redness on the skin. In order to avoid dehydration, they also keep an eye on the infant's temperature, feeding habits, and hydration levels. In addition, nurses offer emotional support and process education to parents.

Phototherapy

Phototherapy (light therapy) is a way of treating jaundice. Special lights help break down the bilirubin in your baby's skin so that it can be removed from his or her body. This lowers the bilirubin level in your baby's blood.

Purpose

- To support the care of babies with hyperbilirubinemia.
- To decrease infant serum bilirubin levels.
- To maintain phototherapy treatment safely and effectively.
- To minimize infant-maternal separation and facilitate breastfeeding.

Lights Used In Phototherapy

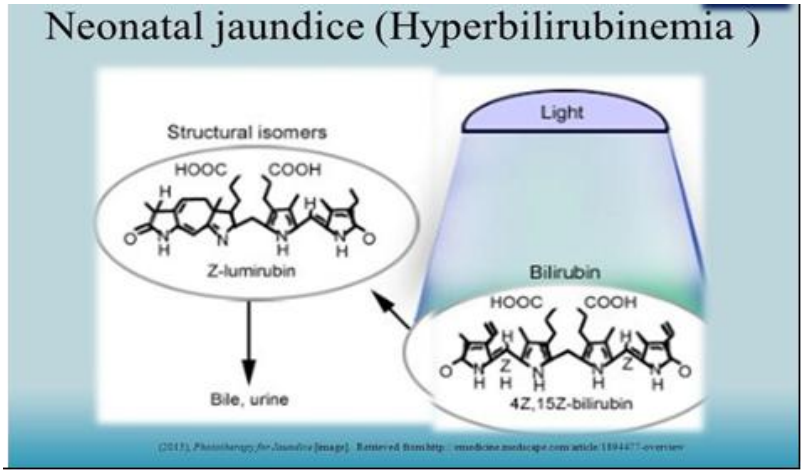
- Micro White halogen lights
- Fluro -2 Blue and 2 White Fluorescent Lights
- Ohmeda Biliblanket – Blue Halogen Light
- Medela Bilibed Blue Fluorescent Light

Types Of Phototherapy Unit

- Single Surface Unit
- Double Surface Unit
- Triple Surface Unit

Mechanism Of Phototherapy

Blue-green light in the range of 460-490 nm is most effective for phototherapy. The absorption of light by the normal bilirubin (4Z,15Z-bilirubin) generates configuration isomers, structural isomers, and photooxidation products. The 2 principal photoisomers formed in humans are shown. Configurational isomerization is reversible and much faster than structural isomerization. Structural isomerization is slow and irreversible. Photooxidation occurs more slowly than both configurational and structural isomerization. Photooxidation products are excreted mainly in urine.



Complications

- Overheating – monitor neonate's temperature.
- Water loss from increased peripheral blood flow and diarrhoea (if present)
- Diarrhoea from intestinal hypermotility.
- Ileus (preterm infants)

- Rash.
- Retinal damage.
- 'Bronzing' of neonates with conjugated hyperbilirubinaemia.
- Temporary lactose intolerance.

Nursing Management

Nurses play a crucial role in ensuring effective care. Here are some key aspects oftheir role:

1. **Monitoring and Assessment**:
   - Nurses closely monitor the baby's bilirubin levels during phototherapy.
   - They assess the baby's skin condition, hydration, and overall well-being.
   - Regular temperature checks are essential, as phototherapy can increase the riskof dehydration.
2. **Skin and Eye Care**:
   - Babies undergoing phototherapy are undressed and have their eyes covered while lying under special blue lights.
   - Nurses provide skin care to prevent irritation or damage due to prolongedexposure to light.
   - Eye protection is crucial to shield the baby's eyes from the phototherapy light.
3. **Feeding Support**:
   - Nurses assist with the baby's feeding plan.
   - They ensure that the baby receives adequate nutrition during phototherapy.
   - Proper feeding helps maintain hydration levels and supports bilirubinreduction.
4. **Weight Monitoring**:
   - Nurses regularly check the baby's weight to assess overall health.
   - As the phototherapy progresses, bilirubin levels typically decrease to a saferange.

II. Conclusion

Phototherapy has been used since 1958 to treat newborn hyperbilirubinemia. It structurally isomerizes unconjugated bilirubin from the skin, converting it into a water- soluble form (lumirubin) that may be eliminated in urine. The goal of phototherapy is to lower unconjugated bilirubin levels in order to avoid acute bilirubin encephalopathy, hearing loss, and kernicterus. Lamps providing light with wavelengths ranging from 400 to 500 nanometres (peak at 460nm) are used for phototherapy because bilirubin absorbs this wavelength of light. The light is visible blue and does not contain any UV.Phototherapy is the use of visible light to treat severe newborn jaundice. Approximately 60% of term newborns and 85% of preterm neonates will acquire clinically noticeable Jaundice, which typically appears on day 3, peaks between days 5-7 and disappears by 14 days of age in a term newborn and 21 days in a preterm infant. Phototherapy is used to avoid the neurotoxic consequences of elevated serum unconjugated bilirubin. Phototherapy is a safe and effective way to lower or avoid the rise in serum unconjugated bilirubin levels in newborns, reducing the requirement for exchange transfusions. Nurses play a vital part in phototherapy treatment because they monitor and analyze a baby's bilirubin levels, skin color, and general health. They cover the baby's eyes, ensure that the skin is exposed to light evenly, and feel for pressure points or redness on the skin. Keep a watch on the infant's temperature, eating patterns, and hydration status. Additionally, nurses provide emotional support and procedure instruction to parents.

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