Title: MOBILELED PHOTOTHERAPY UNIT FOR TREATMENT OF NEONATAL HYPERBILIRUBINEMIA

Abstract: The invention presents a new device for the treatment of neonatal hyperbilirubinemia characterized by efficient intensive phototherapy in a compact light weight, safe and mobile form that makes it ideal for home phototherapy. The new device consists of the light source in the form of 500 blue light emitting diodes assembled in a board to cover the trunk of the baby under treatment. A plastic hood designed to cover the trunk of the baby under treatment and the light source can be fitted on the hood. When the light source is switched on, the LEDs bulbs will irradiate the skin of the baby transforming bilirubin to configurational and structure isomers that are not neurotoxic.
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Ui))
— of inventorship (Rule 4.17(iv))

Published:
— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
MOBILELED PHOTOTHERAPY UNIT FOR TREATMENT OF NEONATAL HYPER BILIRUBINEMIA

Technical Field

MOBILELED PHOTOTHERAPY UNIT FOR TREATMENT OF NEONATAL HYPER BILIRUBINEMIA

Background Art:

A device for the treatment of neonatal hyperbilirubinemia using light source directed to the child inside the incubator in the neonatal unit. It is easy to be used for treatment at home.

The Problem or Deficit in the Previous Art:

A large percentage of the neonates were kept in the hospitals for the treatment of hyperbilirubinemia. The percentage of placing in the incubation unit for the treatment of hyperbilirubinemia reached 40% or more, which result in the following harmful effects:

1. Bad psychological effect on the mother due to her separation from the child after birth.
2. Negative effect on establishment of breast feeding due to hospitalization
3. Increased cost of treatment of neonatal jaundice in hospital

What is New in the Invention  Subject:

The mobile device for the treatment of neonatal hyperbilirubinemia facilitates the treatment at home without the need for hospitalization. This covers about 40% of all cases that require treatment:
1. Decreasing the treatment costs.
2. Stability of the breast feeding, as the child is not separated from his mother in the case of treatment at home.
3. Avoiding the harmful psychological effects resulting from the separation of the mother from her child in his first days of life after birth, due to hospitalization.

**Disclosure of Invention**

(Including operation procedure in cases of devices, tools, and equipment, or chemical preparation in cases of chemical and agricultural materials, laboratorial experiments, and side effects. The tables and explanatory drawings - if there is any - are appended in separate pages after the new elements which need protection. The drawings have to be numbered and in vertical position, without any illustrating data. They are identified only by figures, explained inside the detailed description).

**Operation Procedure of the Portable Device for the Treatment of the Neonatal Hyperbilirubinemia at Home:**

0 The mobile unit for the phototherapy of the hyperbilirubinemia is placed on the trunk of the baby under treatment.
0 The eyes are covered to shield them from the light.
0 The electric current is connected through the operation switch.
0 The electric current is switched off while feeding or changing the diaper, then the device is switched on again.
0 The room temperature should be about 28°C using suitable means of heating according to the atmospheric temperature.

There are no harmful effects to the phototherapy. It is safe treatment and the new mobile unit for the phototherapy of the neonatal hyperbilirubinemia is characterized by the blue light emitting diodes which do not raise the temperature of the child in spite of its closeness from his skin.
Method of Usage:

The mobile device for phototherapy of the neonatal hyperbilirubinemia presents a simple and highly efficient method for the home treatment as a substitute for hospitalization for cases of moderate severity which are more than 40% of the hyperbilirubinemia case to be placed in the hospital.

The device is given to the mother, explaining to her the method of using it, and the follow up by the physician. So the percentage of placing neonates in the incubators for the treatment of the hyperbilirubinemia will be reduced and the harmful effects of this placing will be avoided.

Brief Description of Drawings

1. Fixation board of the light units.
2. Light units ($n = 500$), each of which is light emitting diode in the blue spectrum.
3. Plastic bracket surrounding both sides of the baby and from the top it holds the phototherapy board.
4. Plug of the electric current with an operating switch.
CLAIMS

1- The design of LED Phototherapy Unit in the form of a hood that covers the body of the baby under treatment. Provides the following advantages.

2- The short distance between the LED light sources and the skin of the baby augments the intensity of irradiation.

3- The safety and simplicity of the device makes it suitable for home Phototherapy.