

Herasimova O., Senik O., Semenova N., Golodko K.

THE EFFECTS OF LIGHT ON THE PREMATURE INFANTS

Kharkiv National Medical University, (department of hygiene and ecology № 2),

Kharkiv, Ukraine

Introduction: It has long been hypothesized that bright neonatal intensive care units illumination may be implicated as a cause of retinopathy of premature infants. New researches have shown that despite advances in neonatology, Retinopathy remains a leading cause of morbidity and infant blindness in the premature infants. However, these issues have not been sufficiently studied.

The aim of our study was to examine the adverse effects of bright light on the premature infants in the neonatal intensive care units.

Materials and methods of researches. Distribution of children of the sex was 1:1. Participants have been divided into 3 groups: I (61) newborns with very high levels of light, II group (control) (57) premature with low levels of light and III group – (40) newborns with very low levels of light and LEDs. During our researches the main attention was focused on studying the effects of bright light on the premature infants, who needs nursing in NICU for a long period of time. This period could last several days or several weeks, even months using medical equipment. Our diagnosis of retinopathy included history of present illness.

Results of researches. The sources of light generated light levels (from 7 to 900 lx) in the NICUs № 1, in the NICUs № 2 from 200 to 480 lx, in the NICUs № 3 from 5 to 450 lx. There are fluorescent, incandescent and halogen lamps in the NICUs № 1 and 2. There are LED lamps (light emitting diodes) in the NICUs № 3. Light levels are ranged from 7 to 900 lx in the NICUs № 1 and 200 – 480 lx in the NICUs № 2. Lighting levels in the NICUs № 3 are ranged 5 – 450 lx. As a result, we have a statistically significant difference by Student's criterion, that in the NICU with high levels of light the retinopathy of prematurity was in 85.7 % of premature infants, in the NICU with low of light levels the retinopathy of prematurity was in 67.1% of premature infants, in NICUs № 3, retinopathy was not registered. Statistically significant difference by Fisher criterion at $p < 0,05$. Our studies confirm that using double-wall incubators and capes on them decreased light levels from 7 to 15 lx.

Conclusions. The bright light should be considered as one of the adverse factors of the complex factors influencing on the development of premature infants. Effects of bright light may cause the violation of growth, development and differentiation of the visual analyzer in premature infants. Incubators and capes are reduce lighting levels to 760 lx and should be encouraged to reduce the effects of bright light in the neonatal intensive care units.

So, organization of protective regimen is obligatory in the neonate intensive care unit. It is necessary to decrease light levels. We recommend replacing fluorescent, incandescent lamps on the LED lamps. We recommend double walls incubators and capes to reduce the effects of bright light in the neonatal intensive care units.

Currently, we will to continue to study the impact of bright light on the development of preterm infants.