STRABISMUS INCIDENCE IN INFANTS BORN IN SPLIT-DALMATIA COUNTY 2002-2005

Dobrila Karlica[1], Davor Galetović[1], Ljubo Znaor[1] and Marija Bucat[2]

[1]University Department of Ophthalmology; [2]University Department of Neonatology, Split University Hospital Center, Split, Croatia

SUMMARY – The aim of the study was to determine the incidence of strabismus in preterm infants born between 2002 and 2005 in Split-Dalmatia County, and to compare it with term infants. Data were collected from Department of Public Health, Split-Dalmatia County and Strabology Outpatient Department, University Department of Ophthalmology, Split University Hospital Center. Strabismus was present in 796 (3.97%) children born between 2002 and 2005. Strabismus was diagnosed in 1.37% of term infants and 17.57% of preterm infants. Various factors can produce disorders in preterm infants, such as diffuse and focal defects of the white brain matter, and disorders of oligodendroglial cells, which may explain the higher incidence of strabismus in preterm infants as compared with term infants.

Key words: *Infant; Infant – premature; Strabismus – diagnosis; Strabismus – epidemiology; Strabismus – etiology; Croatia*

Introduction

Preterm infant is a child born before 37th week of gestation. Preterm infants are a high risk group for a number of reasons, e.g., immaturity of all organs and organ systems (thus their full and normal functioning being questionable), the cause of preterm delivery (which may worsen the problems caused by immaturity), the elected type of delivery termination, etc.[1-3]. The group of very low birth weight (VLBW) infants weighing less than 1500 grams and/or 32 weeks of gestation are at a very high risk of such disorders. A high prevalence of neurologic deficits due to multiple lesions of the central nervous system (CNS) in these children has been demonstrated in many studies[4-8]. These lesions are caused by immaturity, ischemia and/or maternal infection, and include intraventricular hemorrhage most frequently involving germinative matrix, post-hemorrhagic hydrocephalus, and periventricular leukomalacia.

Correspondence to: *Dobrila Karlica, MD, PhD*, University Department of Ophthalmology, Split University Hospital Center, Spinčićeva 1, HR-21000 Split, Croatia
E-mail: dobrilakarlica@hotmail.com
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Studies reported in the last decade show that periventricular leukomalacia is the most important predictor of possible neurologic dysfunctions in alive children from this group. Approximately 10% of these children develop cerebral palsy, and around 50% have cognitive and/or behavioral disturbances[9-11].

The aim of this study was to determine the incidence of strabismus in preterm infants born in Split-Dalmatia County between 2002 and 2005, and to compare them with term infants.

Patients and Methods

Data were collected from Department of Public Health, Split-Dalmatia County and Strabology Outpatient Department, University Department of Ophthalmology, Split University Hospital Center. Preterm infants were regularly followed-up at Department of Neonatology, Split University Hospital Center. Later, control visits were performed at our Strabology Outpatient Department, where all preterm infants born in other parts of the Split-Dalmatia County were followed-up.

Results

During the study period (2202-2005), there were 20,045 live births, of which 2882 preterm and 17,163 term infants (Table 1). In the first two years, the number of deliveries was under 5000 *per* year, whereas in the last two years it was over 5000 *per* year. The number of preterm infants was under 700 *per* year in the first two years and over 700 *per* year in the last two years (Fig. 1). Among all children born alive between 2002 and 2005,

Table 1. Distribution of strabismus in children born in Split-Dalmatia County 2002-2005

Strabismus		No strabismus	Total
Esotropia	Exotropia		Term
292	273	16598	17163	Preterm
136	95	2651	2882	Total
428	368	19249	20045	

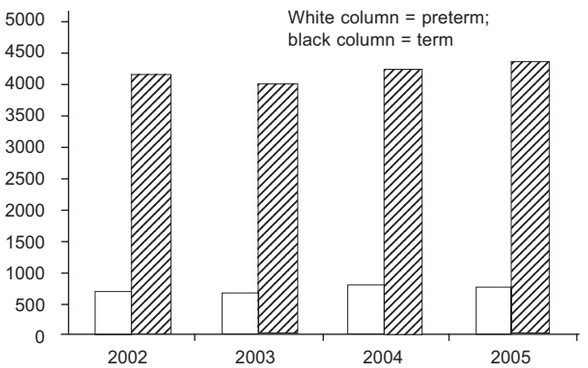

Fig. 1. Number of preterm and term infants born in Split-Dalmatia County 2002-2005.

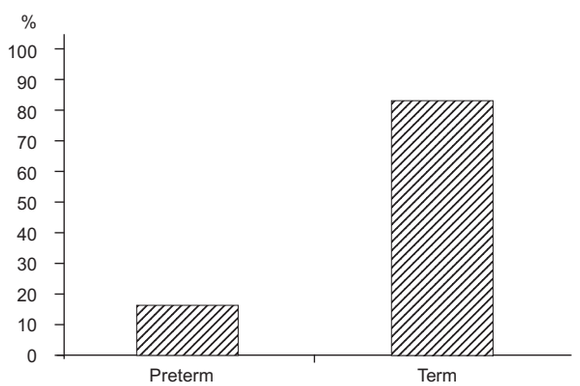

Fig. 2. Distribution of preterm and term infants born in Split-Dalmatia County 2002-2005.

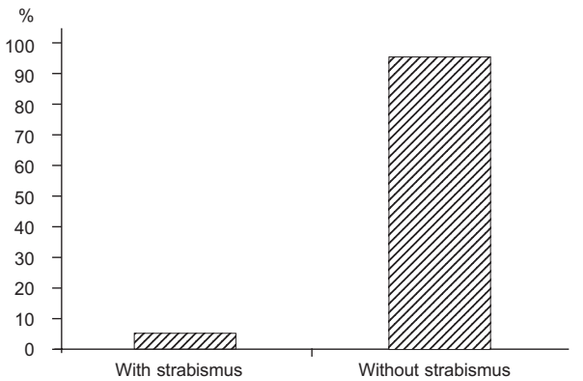

Fig. 3. Strabismus percentage in infants born in Split-Dalmatia County 2002-2005.

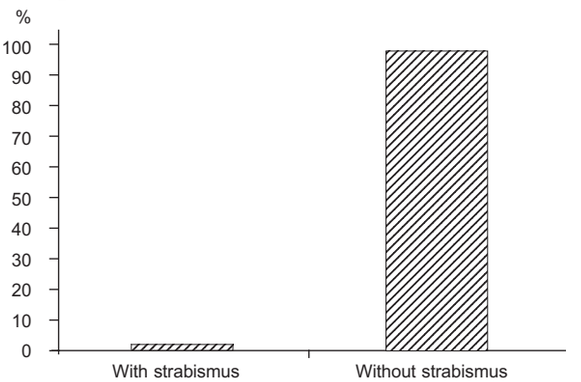

Fig. 4. Strabismus percentage in term infants born in Split-Dalmatia County 2002-2005.

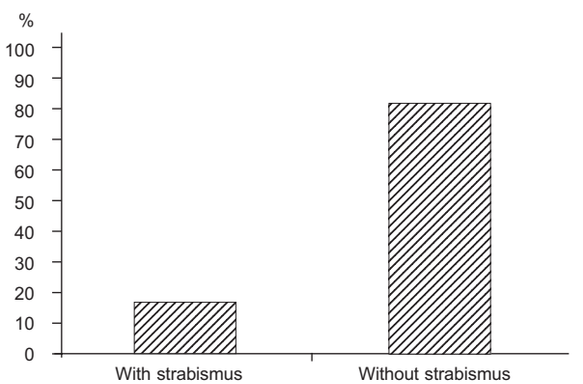

Fig. 5. Strabismus percentage in preterm infants born in Split-Dalmatia County 2002-2005.

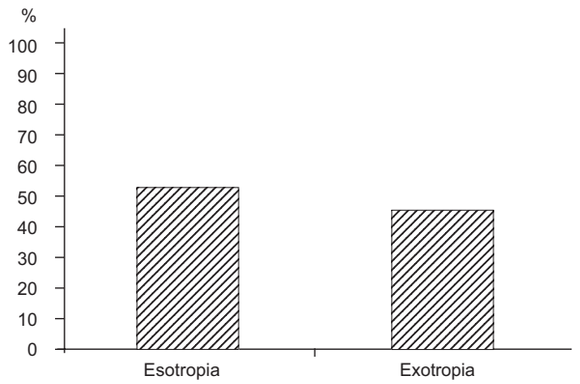

Fig. 6. Percentage of esotropia and exotropia in all infants born in Split-Dalmatia County 2002-2005.

there were 16.04% of preterm and 83.96% of term infants (Fig. 2). Analysis of patient records kept at our Strabology Outpatient Department showed that 3.97% of children born between 2002 and 2005 had strabismus (Fig. 3). Strabismus was diagnosed in 1.37% of term infants (Fig. 4) and 17.57% of preterm infants (Fig. 5). Esotropia and exotropia were found in 53.77% and 46.23% of all children born in the Split-Dalmatia County between 2002 and 2005, respectively (Fig. 6). In term children, the percentage of esotropia was 58.87% and of exotropia 41.13% (Fig. 7).

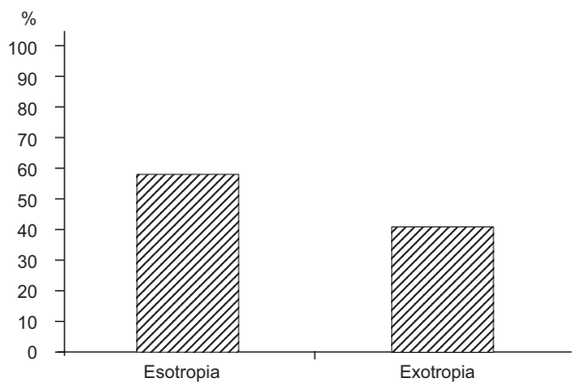

Fig. 7. Percentage of esotropia and exotropia in preterm infants born in Split-Dalmatia County 2002-2005.

Discussion

A higher incidence of strabismus in preterm infants as compared with term infants has been reported in the literature[12,13]. The preterm condition is not a cause of CNS disorder itself, but the immaturity of a preterm infant can be associated with a number of factors that may produce disorders such as diffuse and focal defects of the white brain matter or intact white matter (nerve fibers), and disorders of oligodendroglial cells that are responsible for myelin production. This may explain the higher incidence of strabismus in preterm than in term children.

Most of the preterm children with strabismus continuously followed-up at our institution have neurologic problems, among which dystonic syndrome is most common. Some of these children have cerebral palsy. The cause of these problems lies in immaturity of the white matter of the brain, which also explains the high incidence of strabismus.

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Sažetak

INCIDENCIJA STRABIZMA KOD NOVOROĐENČADI U SPLITSKO-DALMATINSKOJ ŽUPANIJI OD 2002. DO 2005. GODINE

D. Karlica, D. Galetović, Lj. Znaor i *M. Bucat*

Cilj studije bio je ispitati incidenciju strabizma u nedonoščadi rođene između 2002. i 2005. godine u Splitsko-dalmatinskoj županiji, te ju usporediti s onom u djece rođene u terminu. Podatci su prikupljeni iz Uprave za javno zdravstvo Splitsko-dalmatinske županije i Strabološke ambulante Klinike za očne bolesti Kliničkog bolničkog centra Split. Strabizam je zabilježen kod 796 (3,97%) djece rođene u navedenom razdoblju. Strabizam je dijagnosticiran kod 1,37% djece rođene u terminu i 17,57% nedonoščadi. Kod nedonoščadi različiti čimbenici mogu izazvati poremećaje kao što su difuzni i žarišni defekti bijele moždane tvari, te poremećaje oligodendroglijalnih stanica, što bi pak moglo objasniti višu incidenciju strabizma kod nedonoščadi u usporedbi s djecom rođenom u terminu.

Ključne riječi: *Novorođenče; Nedonošče; Strabizam – dijagnostika; Strabizam – epidemiologija; Strabizam – etiologija; Hrvatska*