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Affects the Altituted in the Presence of Premature Necrotizing Enterocolitis in Premature Babies Born in Latin America at Sea Level Versus 2000 Meters Above Sea Level, Between 2015 And– 2020?

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ABSTRACT: Necrotizing enterocolitis (NE) is a common disease with a high associated mortality. NE is more common in preterm and low-birth-weight newborns, as well as patients with anemia, heart disease such as patent ductus arteriosus, sepsis or hypoxia at birth and patients receiving formula, among other causes.The pathophysiology of this disease is the premature exposure of the intestinal immune system to the intestinal flora. This premature exposure causes inflammation, mucosa disruption, vasoconstriction, and necrosis. This increases the risk of infectious pathogens that further damage the intestinal barrier and alter the bacterial flora. (2), perpetuating the local lesion (8), increasing morbidity and mortality. One third of these patients will eventually require surgery. Currently, there is no conclusive data on the risk of necrotizing enterocolitis at different altitudes in Latin America. Clarifying the effect of altitude in this disease will be essential in the management and prognosis of neonates affected by this illness(1).

KEYWORDS: necrotizing enterocolitis (NE); premature newborn; low birthweight; intestinal perforation; meters above sea level (m.a.s.l)

BACKGROUND

Necrotizing enterocolitis is one of the most important causes of prolonged hospital stay and complications in neonatal units. Understanding its pathophysiology in relation to hypoxia and the alteration of the intestinal flora has allowed the development of opportune therapeutic measures that have improved the prognosis of these patients. However, there are no conclusive studies that determine if NE frequency is higher in neonates in Latin American Neonatal Units located at altitudes of above 2000 meters above sea level compared to units at sea level. Therefore, there is a research need in this area to further determine if there is a relationship between altitude and NE as well as to evaluate if the current NE management is adequate in this setting.

OBJECTIVES

• To assess the relationship between the development of NE in premature infants hospitalized in the Neonatal Units of EPIC Latino located at sea level versus an altituted of greater than 2000 m.a.s.l during the period 2015 – 2020.

• To apprase the association between necrotizing enterocolitis and gestational age.

METHODS

This is a retrospective cross-sectional analytical review of preterm newborns with Necrotizing Enterocolitis registered in the Epic Latino software during the period 2015 to 2020.

Selection criteria: premature infants, defined as less than 37 weeks with signs of necrotizing enterocolitis, hospitalized in the Neonatal Units of EPIC Latino.

Exclusion criteria: full-term newborns, no clear diagnosis of necrotizing enterocolitis, incomplete records, complex congenital malformations, patients outside the study period.

RESULTS:

There were 8,633 premature newborns, of which 309 presented NE. 101 neonates were treated at neonatal units located at an altitude above 2000 m.a.s.l.

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In the gestational age group, more cases of NEC were identified: 11.5% (128 of 1106 patients) in preterm infants less than 28 weeks of gestational age (Fig. 1) and this value was independent of height (Table 1).

Table 1. Incidence of Necrotizing Enterocolitis according to Height and Gestational Age.

Gestational Age (weeks)	➢ 2000 m.a.s.l		< 2000 m.a.s.l		TOTAL
	Yes	NO	Yes	NO	
< 28	36	219	92	400	1106
28,1-31,6	35	702	66	960	2187
32-36,6	30	2536	50	3507	5340
TOTAL	101	3457	208	4867	8633

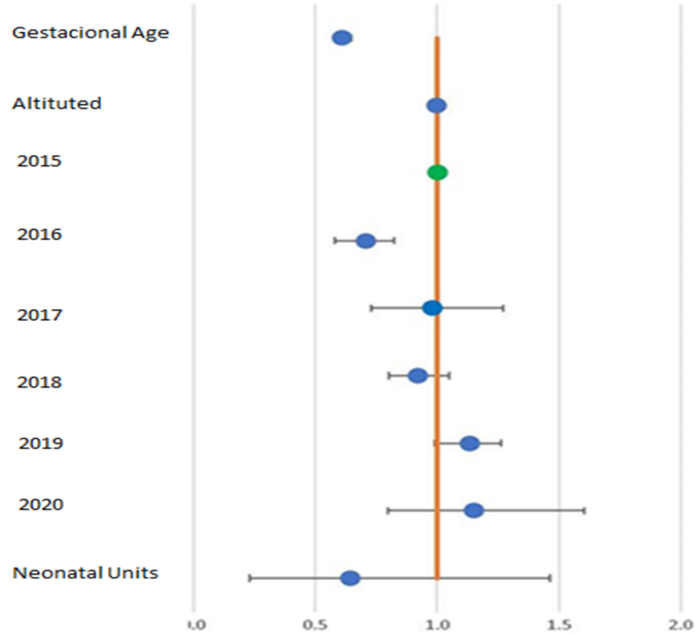

Figure 1. Enterocolitis in premature infants under 37 weeks

ANALYSIS

In this study, a higher prevalence of NE was found at a lower gestational age (less than 28 weeks). No higher risk of NE was found in patients treated at an altitude of greater than 2000 m.a.s.l. Therefore, we concluded that the altitude height does not solely influence the incidence of NE. On the other hand, the gestational age was associated with the incidence of NE and possibly the management.

CONCLUSIONS

It is concluded that at a lower gestational age (especially in premature infants under 28 weeks), there is a higher prevalence of necrotizing enterocolitis regardless of the altitude. Consequently, our study does not provide enough data to conclude altitude is a variable in the risk of NE. Further research is recommended in larger patient populations to assess the significance of these findings. On the other hand, we found that the degree of immaturity of premature infants plays a more important role in the pathology of necrotizing enterocolitis in the studied population.

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