

# Impact of small for gestational age and bronchopulmonary dysplasia on neurodevelopment at 2 years in preterm infants of less than 32 weeks

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**Objective.** To evaluate the impact of small for gestational age (SGA) status and bronchopulmonary dysplasia (BPD) on cognitive neurodevelopmental score (COG) at 2 years (Y) in preterm infants with a gestational age (GA) of less than 32 weeks (W).

**Materials and Methods.** Preterm infants with GA between 24.0-31.6W, admitted to the NICU from January 01, 2006 to December 31, 2019, with a neurodevelopmental assessment at 2Y were studied. Outborn and congenital malformations were exclusion criteria. Infants with a birth weight below the 10<sup>th</sup> centile according to the Italian growth charts were classified as SGA, whereas others as NoSGA.

BPD was defined according to the physiologic definition. SGA with BPD (SGA-BPD), SGA without BPD (SGA-NoBPD), and NoSGA with BPD (NoSGA-BPD) were GA- and gender-matched with NoSGA without BPD (NoSGA-NoBPD). COG at 2Y was assessed using Bayley-III test.

**Results.** We screened 1336 infants, 812 met the inclusion criteria and were analysed: 47 SGA-BPD (6%), 97 SGA-NoBPD (12%), 79 NoSGA-BPD (10%), and 589 NoSGA-NoBPD (72%). COG at 2Y was lower in SGA-BPD, SGA-NoBPD and NoSGA-BPD compared to NoSGA-NoBPD ( $86.2 \pm 14.1$ ,  $92.1 \pm 15.9$ ,  $91.1 \pm 16.3$ , and  $97.3 \pm 15.4$ ,  $p < 0.001$ , respectively;

**Figure 1).** This result was confirmed in the GA- and gender-matched pairs (SGA-BPD vs NoSGA-NoBPD:  $-11 \pm 21$ ,  $p = 0.001$ ; SGA-NoBPD vs NoSGA-NoBPD:  $-5 \pm 23$ ,  $p = 0.026$ ; NoSGA-BPD vs NoSGA-NoBPD:  $-5 \pm 21$ ,  $p = 0.044$ ).

**Conclusions.** SGA status and BPD were independently associated with a reduced COG at 2Y in preterm infants of less than 32W. Neurodevelopment at 2Y may benefit from combined prenatal and neonatal strategies to reduce the incidence of SGA and BPD in preterm infants.

Table 1.

