

## **FAKTOR PREDIKTOR DISPLASIA BRONKOPULMONER PADA BAYI BERAT LAHIR KURANG DARI 1500 GRAM**

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### **INTISARI**

**Latar belakang:** Displasia bronkopulmoner (DBP) merupakan salah satu komplikasi yang terjadi pada bayi kurang bulan dan berat lahir rendah. Insiden DBP tidak berkurang selama 20 tahun terakhir. Komplikasi DBP antara lain rehospitalisasi, penyakit paru kronik, kardiovaskuler, gangguan pertumbuhan dan perkembangan yang akan mempengaruhi kualitas hidup pasien. Beberapa penelitian mengenai faktor prediktor DBP menunjukkan hasil inkonsisten.

**Tujuan:** Menentukan penggunaan ventilator mekanik >2 hari awal kehidupan, sindrom distres respirasi (SDR), *hemodynamically significant patent ductus arteriosus* (hsPDA), sepsis awitan dini, kecil masa kehamilan (KMK), rasio neutrofil limfosit (RNL), angka trombosit, dan kadar hematokrit sebagai faktor prediktor kejadian DBP.

**Metode:** Dilakukan studi kohort retrospektif dengan subjek bayi berat lahir <1500 g yang dirawat di NICU RSUP Dr. Sardjito periode Januari 2017-November 2021. Sampel diambil secara *total sampling*. Pengolahan data menggunakan perangkat lunak program pengolah data yang terkomputerisasi. Data *survival rate* dianalisis dengan metode kurva Kaplan-Meier. Faktor prediktor kejadian DBP ditentukan menggunakan analisis multivariat regresi cox. Hubungan antar variabel dinyatakan dengan *hazard ratio* (HR) dan interval kepercayaan 95% dengan tingkat kemaknaan statistik  $p < 0,05$ .

**Hasil:** Seratus enam belas bayi berat lahir <1500 g diikutsertakan, dengan median usia gestasi 30 (29; 32) minggu. Angka kejadian DBP adalah sebesar 19% dengan proporsi terbanyak pada kelompok usia gestasi 28-31 minggu (*very preterm*) yaitu 63,6%. Rerata waktu terjadinya DBP adalah 65,6 hari. Tingkat insiden keseluruhan adalah 4,7 kasus per 1000 *person-days* atau 1,7 kasus per *person-year*. Pada analisis multivariat, penggunaan ventilator mekanik >2 hari awal kehidupan (HR=7,7 kali,  $p=0,008$ ), anemia (kadar hematokrit <39%) (HR=12 kali,  $p=0,001$ ), hsPDA (HR=3,5 kali,  $p=0,041$ ) mempunyai kontribusi terhadap kejadian DBP.

**Kesimpulan:** Penggunaan ventilator mekanik >2 hari awal kehidupan, anemia dan hsPDA merupakan prediktor kejadian DBP pada bayi berat lahir <1500 g.

**Kata kunci:** displasia bronkopulmoner, bayi berat lahir <1500 g, faktor prediktor

## PREDICTIVE FACTORS OF BRONCHOPULMONARY DYSPLASIA IN NEONATES BORN AT LESS THAN 1500 GRAMS

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### ABSTRACT

**Background:** Bronchopulmonary dysplasia (BPD) is a complication that occurs in preterm infants and low birth weight. The incidence of BPD has not decreased over the past 20 years. Complications of BPD include rehospitalization, chronic lung disease, cardiovascular disease, impaired growth and development that will affect the patient's quality of life. Several studies on BPD predictors factors have shown inconsistent results.

**Objective:** To determine the use of a mechanical ventilator in the first 2 days of life, neonatal respiratory distress syndrome, hemodynamically significant patent ductus arteriosus (hsPDA), early onset sepsis, small for gestational age (SGA), neutrophil-lymphocyte ratio (NLR), platelet count and hematocrit as predictive factors of BPD.

**Methods:** This was a retrospective cohort study of neonates weighing <1500 g who were admitted to the NICU of Dr. Sardjito Hospital during January 2017- November 2021. Samples were taken with the total sampling method. Data processing using computerized statistical software. Survival probabilities of the predictive factors were presented in the Kaplan-Meier survival curve. The predictors of BPD were determined using multivariate cox proportional hazard regression. The relationship between variables was presented as hazard ratio (HR), 95% confidence intervals (95% CI), and statistical significance level  $p < 0,05$ .

**Results:** One hundred and sixteen neonates weighing <1500 g were enrolled, with a median gestational age of 30 (29; 32) weeks. The incidence of BPD was 19% with the highest proportion in the 28-31 weeks of gestation (very preterm) which was 63,6%. On the Kaplan-Meier survival analysis, the mean overall survival (OS) was 65,6 days. The incidence rate was 4,7 cases per 1000 person-days or 1,7 cases per person-year. In multivariate analysis, mechanical ventilation in more than first 2 days of life (HR=7,7 times,  $p=0,008$ ), anemia (hematocrit <39%) (HR=12 times,  $p=0,001$ ), and hsPDA (HR=3,5 times,  $p=0.041$ ) contributed to the incidence of DBP.

**Conclusions:** The use of mechanical ventilator in more than first 2 days of life, anemia, and hsPDA are predictors of BPD in neonates born at <1500 g.

**Keywords:** bronchopulmonary dysplasia, neonates born at <1500 g, predictive factor