

# Faktor Risiko Perdarahan Intraventrikular pada Bayi Usia Gestasi Kurang dari 35 Minggu di Rumah Sakit Cipto Mangunkusumo = Risk Factors for Intraventricular Hemorrhage in Baby with Gestasional Age Less Than 35 Weeks at Cipto Mangunkusumo Hospital

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## Abstrak

Latar belakang: Perdarahan intraventrikular (PIV) menjadi penyebab morbiditas dan mortalitas bayi prematur. Sekitar 27% bayi dengan BB <1.500 gram mengalami PIV pada berbagai derajat (1–4). Faktor risiko PIV dapat berasal dari maternal, seperti preeklamsia, tanpa steroid antenatal, dan persalinan per vaginam serta berasal dari neonatal, seperti usia gestasi lebih muda, berat badan lahir lebih rendah, jenis kelamin lelaki, nilai Apgar rendah, asfiksia, pemberian inotropik, trombositopenia, ventilasi mekanik invasif, sepsis, sindrom distres pernapasan, dan duktus arteriosus persisten. Identifikasi faktor risiko yang berhubungan dengan PIV penting agar penatalaksanaan yang tepat dapat dilakukan dan sebagai evaluasi pencegahan dan tata laksana PIV yang saat ini sudah diterapkan.

Metode: Penelitian kasus kontrol ini melibatkan subjek bayi usia gestasi <35 minggu di RSCM yang diambil retrospektif secara consecutive sampling mulai perawatan Agustus 2022 hingga jumlah sampel terpenuhi. Subjek dibagi menjadi kelompok kasus (dengan PIV) dan kontrol (tanpa PIV) berdasarkan hasil USG kepala selama perawatan. Masing-masing kelompok diidentifikasi faktor risiko yang ada dari rekam medis, baik faktor maternal maupun neonatal. Data kemudian dianalisis menggunakan program SPSS.

Hasil: Total 220 subjek diteliti terdiri atas kelompok kasus 110 subjek dan kontrol 110 subjek. Dari 110 kasus didapatkan PIV derajat 1 (69,1%), derajat 2 (12,7%), derajat 3 (10%), dan derajat 4 (8,2%). Analisis bivariat menunjukkan terdapat hubungan bermakna antara PIV dengan usia gestasi <28 minggu (OR 5,44; IK 95% 2,23-13,27;  $p<0,001$ ), berat badan lahir <1.000 gram (OR 6,23; IK 95% 2,87-13,52;  $p<0,001$ ), berat badan lahir 1.000-1.499 gram (OR 3,04; IK 95% 1,62-5,71;  $p=0,001$ ), nilai Apgar menit ke-1 ( $p=0,004$ ), nilai Apgar menit ke-5 ( $p=0,03$ ), pemberian inotropik (OR 2,47; IK 95% 1,35-4,53;  $p=0,005$ ), jumlah trombosit <50.000/L (OR 2,52; IK 95% 1,17-5,42;  $p=0,018$ ), jumlah trombosit 50.000-99.000/L (OR 3,42; IK 95% 1,51-7,74;  $p=0,003$ ), ventilasi mekanik invasif (OR 3,71; IK 95% 2,11-6,53;  $p<0,001$ ), sepsis (OR 2,84; IK 95% 1,64-4,90;  $p<0,001$ ), dan DAP (OR 2,01; IK 95% 1,07-3,79;  $p=0,042$ ). Analisis multivariat menunjukkan hanya berat badan lahir <1.000 gram (OR 3,93; IK 95% 1,71-9,06;  $p=0,001$ ), berat badan lahir 1.000-1.499 gram (OR 2,57; IK 95% 1,34-4,92;  $p=0,004$ ), dan penggunaan ventilasi mekanik invasif (OR 2,49; IK 95% 1,34-4,63;  $p=0,004$ ) yang mempunyai hubungan bermakna dengan PIV.

Kesimpulan: Faktor risiko yang mempunyai hubungan bermakna dengan PIV pada bayi usia gestasi <35 minggu adalah berat badan lahir <1.500 gram dan penggunaan ventilasi mekanik invasif.

.....Background: Intraventricular hemorrhage (IVH) is a cause of morbidity and mortality in preterm infants. Approximately 27% of infants weighing <1,500 gram have PIV in various degrees (1-4). Risk factors for IVH can be maternal origin, such as preeclamsia, absence of steroid antenatal, and vaginal delivery; and also from neonatal origin, such as younger gestational age, lower birth weight, male gender, lower Apgar score, asphyxia, inotropic administration, thrombocytopenia, invasive mechanical ventilation, sepsis, respiratory distress syndrome and patent ductus arteriosus (PDA). Identification of risk factors associated with IVH is

important so that appropriate management can be carried out and as an evaluation of IVH's prevention and treatment that are currently being implemented.

**Method:** This case-control study involved subjects with gestational age <35 weeks at Cipto Mangunkusumo Hospital who were taken retrospectively by consecutive sampling starting from admission in August 2022 until the number of samples were fulfilled. Subjects were divided into case (with IVH) and control (without IVH) groups based on the results of head ultrasound during hospitalization. Each group was identified existing risk factors from medical record, both maternal and neonatal factor. The data were then analyzed using the SPSS program.

**Result:** A total 220 subjects were studied, consisting 110 subjects in case group and 110 subjects in control group. Of the 110 cases, IVH grade 1 (69.1%), grade 2 (12.7%), grade 3 (10%), and grade 4 (8.2%).

Bivariate analysis showed that PIV was significantly associated with gestational age <28 weeks (OR 5.44; 95% CI 2.23-13.27;  $p < 0.001$ ), birth weight <1,000 grams (OR 6.23; 95% CI 2.87-13.52;  $p < 0.001$ ), birth weight 1,000-1,499 grams (OR 3.04; 95% CI 1.62-5.71;  $p = 0.001$ ), 1st minute Apgar score ( $p = 0.004$ ), 5th minute Apgar score ( $p = 0.03$ ), inotropic administration (OR 2.47; 95% CI 1.35-4.53;  $p = 0.005$ ), platelet count <50,000/L (OR 2.52; 95% CI 1.17-5.42;  $p = 0.018$ ), platelet count 50,000-99,000/L (OR 3.42; 95% CI 1.51-7.74;  $p = 0.003$ ), invasive mechanical ventilation (OR 3.71; 95% CI 2.11-6.53;  $p < 0.001$ ), sepsis (OR 2.84; 95% CI 1.64-4.90;  $p < 0.001$ ), and PDA (OR 2.01; 95% CI 1.07-3.78;  $p = 0.042$ ). Multivariate analysis showed only birth weight <1,000 grams (OR 3.93; 95% CI 1.71-9.06;  $p = 0.001$ ), birth weight 1,000-1,499 grams (OR 2.57; 95% CI 1.34-4.92;  $p = 0.004$ ), and the use of invasive mechanical ventilation (OR 2.49; 95% CI 1.34-4.63;  $p = 0.004$ ) were significantly associated with IVH.

**Conclusion:** Risk factors that significantly associated with IVH in baby with gestational age <35 weeks are birth weight <1,500 grams and the use of invasive mechanical ventilation.