Peran Vitamin D dalam Menentukan Morbiditas Bayi Sangat Prematur dan/atau Berat Lahir Sangat Rendah: Kajian terhadap Sel T Regulator dan Disbiosis Usus = The Role of Vitamin D in Determining the Morbidity of Very Premature and/or Very Low Birth Weight Babies: A Review on Regulatory T Cells and Intestinal Dysbiosis

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Abstrak

Respiratory Distress Syndrome (RDS), Feeding Intolerance (FI), dan sepsis merupakan morbiditas yang sering dialami bayi prematur. Salah satu faktor yang memengaruhi morbiditas adalah defisiensi vitamin D. Kadar vitamin D berkorelasi dengan sel Treg pada penyakit inflamasi bayi baru lahir. Sel Treg berperan dalam keseimbangan mikrobiota di usus. Tujuan penelitian ini untuk mengetahui peran vitamin D dengan kejadian RDS, FI, dan sepsis pada bayi sangat prematur dan/atau BBLSR melalui jalur sel Treg dan disbiosis usus. Design penelitian ini adalah kohort prospektif pada bayi sangat prematur dan/atau BBLSR, dilakukan bulan November 2019–Januari 2021 di Unit Neonatal RSCM. Pemeriksaan kadar vitamin D ibu dan bayi menggunakan metode CLIA dan Treg dengan flow cytometry menggunakan Treg detection kit CD4+CD127lowCD25+. Penilaian mikrobiota dengan Real Time PCR dan enteropati dengan Alpha-1 Antitrypsin. Pada penelitian ini didapatkan sebesar 88,3 % ibu defisiensi vitamin D (rerata 12,23 ± 5,07 ng/mL) dan 53% bayi defisiensi vitamin D (rerata 15,79 6,9 ng/mL). Didapatkan korelasi antara kadar vitamin D ibu dan bayi (r = 0,76, p < 0,001). Kadar vitamin ibu dan bayi tidak berhubungan dengan dengan kejadian RDS, FI, dan sepsis. Terdapat hubungan bermakna antara disregulasi sel Treg dengan kejadian FI (p = 0,04) dan sepsis (p = 0,03). Semua bayi mengalami disbiosis. Tidak didapatkan perbedaan komposisi mikrobiota pada RDS, FI, dan sepsis. Terdapat hubungan bermakna antara enteropati dengan kejadian sepsis (p = 0,02). Simpulan : Ibu defisiensi vitamin D akan melahirkan bayi defisiensi vitamin D. Kadar vitamin D tidak berpengaruh terhadap kejadian RDS, FI, dan sepsis. Pada bayi dengan disregulasi sel Treg, kejadian FI dan sepsis lebih tinggi dibandingkan yang tidak. Bayi dengan kondisi disbiosis tidak berbeda untuk terjadinya RDS, FI, dan sepsis. Kondisi enteropati menyebabkan kejadian sepsis lebih tinggi.

.....Respiratory distress syndrome, feeding intolerance, and sepsis are the most common morbidities found in premature babies. One of the factors affecting morbidity is vitamin D level. Vitamin D level is correlated with the role of Treg cells in inflammatory neonatal. Treg cells act in balancing microbiota in the intestines. This study aimed to determine the role of vitamin D in increasing the incidence of sepsis, feeding intolerance, and respiratory distress syndrome in very premature and/or very low birth weight babies through Treg cells and intestinal dysbiosis. This is a cohort study conducted on very premature (< 32 weeks) and/or very low birth weight (birth weight < 1,500 g) babies, from November 2019–January 2021 in the Neonatal Unit of RSCM. Vitamin D levels of the mothers and babies were measured using the CLIA and Treg methods with flow cytometry using the Treg detection kit CD4+CD127lowCD25+. Treg was tested from umbilical cords blood. The fecal examination was conducted to determine intestinal bacteria using real time PCR and Alpha-1 Antitrypsin. Most mothers (88.3%) had vitamin D deficiency with a mean value of 12.33 ± 5.07 ng/mL. The vitamin D level of the umbilical cord was 15.79 ± 6.9 ng/mL. There was a significant correlation between the vitamin D level of mothers and babies (r = 0.76, p < 0.001). There were

no difference between maternal and babies vitamin D serum levels with incidence of RDS, FI, and sepsis.There were a significant correlation between Treg cell dysregulation and the incidence of FI ($p = 0.04$) and sepsis ($p = 0.03$) but not in RDS. All subjects experienced dysbiosis. There was a significant correlation between enteropathy and the incidence of sepsis ($p = 0.02$) but not in RDS and FI. Conclusion: Mothers with vitamin D deficiency will give birth to babies with vitamin D deficiency. There were no correlation between vitamin D and the incidence of RDS, FI, and sepsis. In babies with Treg cell dysregulation, the incidence of feeding intolerance and sepsis will be higher. The composition of the microbiota did not affect the incidence of RDS, FI, sepsis. In babies with enteropathy, the incidence of sepsis will be higher.