Acute kidney injury sebagai luaran morbiditas hiperglikemia pada anak sakit kritis = Acute kidney injury as an outcome of hyperglycemia in critically ill children

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Abstrak

Latar belakang: Hiperglikemia dan AKI merupakan komorbiditas yang sering dijumpai pada anak sakit kritis. Keduanya berhubungan dengan peningkatan morbiditas dan mortalitas. Hubungan antara hiperglikemia dan AKI pada anak sakit kritis belum banyak diketahui.
Tujuan: Diketahuinya perbedaan proporsi AKI pada kelompok anak sakit kritis dengan hiperglikemia dan nonhiperglikemia. Diketahuinya perbedaan rerata kadar gula darah admisi, kadar gula darah puncak, dan durasi hiperglikemia pada kelompok anak sakit kritis dengan AKI dan tanpa AKI.
Metode: Penelitian kohort prospektif dilakukan pada anak sakit kritis usia 1 bulan-18 tahun di ruang resusitasi IGD dan perawatan intensif anak RSCM selama bulan Agustus-Desember 2016. Pemeriksaan kadar gula darah, kreatinin serum, dan kadar NGAL urine dilakukan pada saat admisi. Pemantauan kadar gula darah dilakukan dengan interval 2 jam pada kelompok hiperglikemia. Seluruh subyek diikuti sampai keluar ruang perawatan intensif.
Hasil: Proporsi subyek anak sakit kritis yang mengalami hiperglikemia adalah 46,5 IK 95 36,8-56,2 . Proporsi subyek dengan hiperglikemia yang mengalami AKI menurut kriteria AKIN adalah 30,7 IK 95 21,8 ndash;39,6 , sedangkan proporsi subyek dengan hiperglikemia yang memiliki kadar NGAL urine >135 ng/mL adalah 21,8 IK 95 13,8 ndash;29,8 . Acute kidney injury menurut kriteria AKIN maupun kadar NGAL urine lebih banyak dijumpai pada subyek dengan hiperglikemia, namun perbedaan proporsi tersebut tidak bermakna secara statistik kriteria AKIN: RR 2,08; IK 95 0,93-4,67; P 0,072; NGAL urine >135 ng/mL: RR 1,34; IK 95 0,81-2,1; P 0,243 . Paparan hiperglikemia pada perawatan intensif dengan durasi ge;4 jam risiko AKI meningkat sebesar 2,38 kali IK 95 1,25 ndash;4,56.
Simpulan: Acute kidney injury banyak dijumpai pada anak sakit kritis yang mengalami hiperglikemia. Paparan hiperglikemia ge;4 jam pada perawatan intensif berkaitan dengan peningkatan risiko AKI pada anak sakit kritis.
.....Background Hyperglycemia and AKI are common in critically ill children. Both conditions are associated with increasing mortality and morbidity. The association of hyperglycemia and AKI in critically ill children is still not well understood.
Objective To evaluate the difference in proportion of AKI between critically ill children with and without hyperglycemia. To evaluate the mean difference of initial blood glucose, peak blood glucose, and the duration of hyperglycemia between critically ill children with and without AKI.
Method A prospective cohort study was conducted in critically ill children aged 1 month to 18 years at the emergency unit and the pediatric intensive care unit at Cipto Mangunkusumo Hospital between August December 2016. Blood glucose, creatinine serum, and urine NGAL was examined at admission. Blood glucose was monitored every 2 hours in hyperglycemic subjects. All of the subjects were followed until time of discharge from the intensive care unit.
Result Hyperglycemia in critically ill children was found in 46.5 subject 95 CI 36.8 56.2. Acute kidney

injury based on the AKIN criteria was found in 30.7 hyperglycemic subjects 95 CI 21,8 ndash 39,6, and hyperglycemia with an increased urine NGAL level 135 ng mL was found in 21.8 subjects 95 CI 13.8 ndash 29.8. Acute kidney injury and an increased urine NGAL were more frequently found in subjects with hyperglycemia, however, the difference in the proportion was statistically insignificant AKIN criteria RR 2,08 95 CI 0,93 4,67 P 0,072 urine NGAL level 135 ng mL RR 1,34 95 CI 0,81 2,1 P 0,243 . The duration of hyperglycemia ge 4 hours at the intensive care unit increases the risk of AKI up to 2.38 times CI 95 1.25 ndash 4.56.

Conclusion Acute kidney injury are frequently seen in hyperglycemic critically ill children. A duration of hyperglycemia of ge 4 hours in intensive care unit is associated with an increased risk of AKI in critically ill children.