Dampak pajanan tekanan panas tinggi terhadap gangguan tubulus ginjal (studi pemeriksaan neutrophil gelatinase-associated lipocalin (NGAL) dalam urin = Effect of high heat stress exposure on disorder of kidney tubules examination study of urine neutrophil gelatinase-associated lipocalin (NGAL)

Sri Ayu Vernawati, author

Abstrak

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Latar Belakang : Para pekerja yang melakukan aktivitas fisik di lingkungan panas tinggi dapat mengalami gangguan pada ginjal. Selain glomerulus, bagian tubulointerstium yang memiliki fungsi penting reabsorsi dan sekresi, diduga juga mengalami gangguan. Ingin diketahui lebih lanjut ada tidaknya gangguan pada sel tubulus ginjal para pekerja setelah 4 jam pajanan panas tinggi melalui pemeriksaan NGAL urin yang lebih spesifik.

Metode : Desain penelitian ini adalah baseline study dan pre-post study.Dilakukan di bagian hotpress outsole pabrik sepatu di Tangerang bulan April 2015. Data primer didapat melalui wawancara, pemeriksaan langsung tinggi dan berat badan serta pengambilan sampel NGAL urin dilakukan 2 kali, sebelum dan sesudah 4 jam kerja terpajan tekanan panas tinggi (29,0 oC - 31,05 oC ISBB). Untuk pemeriksaan kadar NGAL menggunakan kit komersial (Quantikine kit Human Lipocalin-2/NGAL Immunoassay).

Hasil : 68 pekerja memenuhi kriteria inklusi penelitian dan 100 % adalah laki-laki berusia 20-40 tahun yang sehat. Didapatkan nilai NGAL urin awal sebelum terpajan panas antara 0.03 ng/ mL ? 12,82 ng/mL dengan median 1.52 ng/mL. Dari pemeriksaan setelah 4 jam kerja terpajan panas terdapat 25 responden (36,8%) mengalami kenaikan nilai NGAL dalam urin dengan median kenaikan sebesar 0,35 mg/dL sedangkan 43 responden (63,2%) tidak mengalami kenaikan nilai NGAL dalam urin .

Simpulan: Tidak terdapat peningkatan yang dianggap bermakna pada rerata nilai NGAL dalam urin para pekerja pabrik yang tepajan tekanan panas tinggi selama 4 jam kerja.
<hr><i>ABSTRACT
Background : Workers performing physical activities in heat-stress environment could have kidney disorder. Beside glomerulus, tubulointerstitium which has important function of reabsorption and secretion, is suspected to also have injury. Further exploration on the impact on kidney tubules cells on the workers after 4 hours exposed to heat-stress through more specific examination of urine NGAL (uNGAL).

Method : Design of this research are baseline study and pre-post study, conducted at the hotpress outsole department at a shoe factory in Tangerang in April 2015. Primary data obtained through interview, direct examination on height and weight and taking sample of uNGAL twice time, before and after 4 hours of moderate working activities in the area of high heat-stress (29,0 oC - 31,05 oC WGBT) . Examining NGAL level by using commercial kit (Quantikine kit Human Lipocalin-2/NGAL Immunoassay).

Result : 68 workers fit with criteria inclusion study and 100% are healthy men aged between 20-40 years. The result of uNGAL initial scores are between 0.03 ng/ mL ? 12,82 ng/mL with median of 1.52 ng/mL. After 4 hours of moderate working activities in the area of high heat-stress there are 25 workers (36,8%) have increase uNGAL level with median of 0,35 mg/dL, while the other 43 workers (63,2%) have not.

Summary : There is no significant changes of urine NGAL score after 4 hours of working within worker population in the area of high heat-stress.</i>