

Hubungan antara pajanan Formaldehida dengan kadar Cystatin C Serum pada pekerja Dipping dan Weaving industri kain ban = the relationship between Formaldehyde exposure with levels of Serum Cystatin C in Dipping and Weaving workers at fabric tire industry

Mei Wulandari Puspitasari, author

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Abstrak

Latar belakang: Hasil pada penelitian hewan coba yang telah dilakukan sebelumnya, salah satunya menyatakan pajanan formaldehida dapat menimbulkan nefrotoksisitas. Cystatin c merupakan penanda endogen laju filtrasi glomerulus yang mendekati ideal. Penelitian ini bertujuan mengetahui hubungan antara pajanan formaldehida dan faktor risiko lain dengan kadar cystatin c serum pada pekerja industri kain ban yang bekerja dengan formaldehida (dipping) dan tidak bekerja dengan formaldehida (weaving).

Metode penelitian: Desain studi adalah potong lintang komparatif. Melibatkan 144 pekerja secara total, masing-masing 72 orang laki-laki dari bagian dipping dan weaving. Data dikumpulkan dengan cara wawancara, kuisisioner, pemeriksaan fisik dan data sekunder pekerja dari data hasil MCU 2012. Cystatin c serum diukur dengan menggunakan metode PENIA.

Hasil: Total sampel dalam penelitian ini yang memenuhi kriteria inklusi sebanyak 119 orang. Hasil pengukuran cystatin c serum menunjukkan rata-rata masih dalam batas normal. Variabel unit kerja dengan formaldehida, perokok sedang, obese dan masa kerja >15-29 tahun memiliki hubungan bermakna dengan kadar cystatin c serum. Dari hasil regresi linear bahwa kekuatan asosiasi paling dominan dengan kadar cystatin c serum adalah unit kerja dengan formaldehida ($=0,293$, $p=0,001$).

Kesimpulan: Rata-rata kadar cystatin c serum pada bagian dipping lebih tinggi dibandingkan bagian weaving, meskipun masih dalam batas normal. Didapatkan hasil kadar cystatin c serum diatas normal dengan kadar 0,986 mg/L pada 1 responden dari bagian dipping yang telah bekerja pada unit dengan formaldehida selama 27 tahun, namun pekerja tersebut juga memiliki faktor risiko lainnya yaitu obese grade 1 dan perokok ringan. Unit kerja dengan formaldehida memiliki hubungan paling dominan dengan kadar cystatin c serum.

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Background: Review of literature from previous animal studies, showed that exposure to formaldehyde can increase the risk of nephrotoxicity. Cystatin c is a nearly ideal endogenous marker of glomerular filtration rate. This study aims to determine that relationship between formaldehyde exposure and other risk factors with levels of serum cystatin c in the fabric tire industry among workers who worked with formaldehyde (dipping department) and those who worked without formaldehyde (weaving department).

Methods: A comparative cross-sectional design was used. A total of 144 workers were included, 72 men from each department. Data collection conducted was by interview using a standardized questionnaire, physical examination and collecting secondary data from 2012 MCU data. Cystatin c was measured by PENIA method.

Results: Workers who met inclusion criteria were 119 people. Formaldehyde exposure, moderate smokers, obese and lenght of work >15-29 years had a meaningful relationship with levels of serum cystatin c. Result of linear regression showed that the dominant associated factor with levels of serum cystatin c is the

workplace that used formaldehyde ($=0,293$, $p=0,001$).

Conclusion: Mean levels of serum cystatin c among workers of the dipping department was higher than weaving department, although still within normal limits. Only one respondent showed at a level of serum cystatin c above normal with $0,986$ mg/L from the dipping department who has been working 27 years, he also had other factors like obese grade 1 and is a light smoker. Working with formaldehyde showed the most dominant relationship with levels of serum cystatin c.