

Correlation between iron deficiency and lead intoxication in the workers of car battery manufacturer.

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Objective: Iron deficiency anaemia is the most common nutritional anaemia in developed and developing countries (1,2,3). In addition, lead intoxication especially in developing countries is an increasing risk for health, because of rapid urbanization and consumption of leaded fuels (4,5). Many studies particularly in children have showed a correlation between iron deficiency and increase blood lead concentration (BLC) (1,5,6). In this study, we evaluate this association in workers of a car battery manufacturer. **Methods:** This research was performed on workers who exposed to lead in a factory of car battery manufacturer of Mashhad, Iran in 2006. We measured laboratory tests including complete blood counts (CBC), serum ferritin concentration with radioimmunoassay method and blood lead concentration with atomic absorption spectrophotometry (Perkin Elmer, Model 3030). Results were analyzed by the Statistical Package for Social Sciences (SPSS, version 11.5) and using statistical tests including t-test and Pearson's correlation coefficient. P value < 0.05 was considered significant. **Results:** Based on clinical (lead line) and laboratory observation, all workers had lead intoxication with mean BLC of $32.2 \pm 13.7 \mu\text{g/dL}$. No significant difference was observed between mean BLC in iron deficient (n=11) and non iron deficient workers (n=78); also, with use of Pearson's correlation coefficient we did not see any correlation between blood lead with serum ferritin and blood hemoglobin. ($r = 0.18$, p value= 0.091 and $r = 0.051$, p value = 0.682 respectively) **Conclusion:** In this study, we did not observe any correlation between blood lead concentration with serum ferritin and hemoglobin. We suggest: 1. similar research in a large population and longer contacts with lead will be carried out; 2. Health improvement of work environments for prevention of lead intoxication. **References:** (1). Kim HS, Lee SS, Hwangbo Y, et al. Cross-sectional study of blood lead effects on iron status in Korean lead workers. *Nutrition* 2003; 19: 571-576. (2). Andrews NC. Iron deficiency and related disorders. In: Greer JP, Foerster J, et al. *Wintrobe's Clinical Hematology*, 11th Edition. Philadelphia: Lippincott, Williams & Wilkin, 2004: 979-1007. (3). Javadzadeh Shahshahani H, Attar M, Taher Yavari M. A study of the prevalence of iron deficiency and its related factors in blood donors of Yazd, Iran, 2003. *Transfusion Medicine* 2005; 15: 287-293. (4). Rondo PH, Carvalho Mde F, Souza MC, et al. Lead, hemoglobin, zinc protoporphyrin and ferritin concentrations in children. *Revista de Saúde Pública* 2006; 40: 71-6. (5) Zimmermann MB, Muthayya S, Moretti D, et al. Iron Fortification Reduces Blood Lead Levels in Children in Bangalore, India. *Pediatrics* 2006; 117: 2014-2021. (6) Alabdullah H, Bareford D, Braithwaite R, et al. Blood lead levels in iron deficient and non-iron deficient adults. *Clin Lab Haematol* 2005; 27:105-9.