

Effect of exposure to second-hand smoke on serum levels of N-terminal pro-brain natriuretic peptide

Abstract

Background and objectives

Exposure to second-hand smoke is as hazardous as exposure to first-hand smoke, and can cause cardiovascular disease. N-terminal pro-B-type natriuretic peptide (NT-proBNP) is a valid negative biomarker of left ventricular (Lv) dysfunction. The current study investigated the effect of exposure to second-hand smoke on serum levels of NT-proBNP, aiming to use NT-proBNP as a screening tool of Lv dysfunction in passive smokers.

Participants and methods

A total of 60 passive smokers and 20 matched controls were enrolled in the study; their ages range from 20 to 35 years. History of cardiovascular or pulmonary disease was an exclusion criterion. Demographic, anthropometric, and passive smoking data were collected through a self-administered questionnaire and physical examination. The extent of passive smoking was assessed by calculating the pack per year history. Serum levels of NT-proBNP were measured using an electrochemiluminescence assay for each participant.

Results

Analysis of data showed that passive smokers were currently exposed to second-hand smoke, 91.7% were living with the smoker, and 8.3% smoker's colleagues. Serum levels of NT-proBNP were 251.2 ± 46.9 and 148.3 ± 29.7 pg/ml in passive smokers and controls, respectively. Also, there was a significant difference ($P < 0.0001$, 105.4 ± 11.64) in serum NT-proBNP between passive smokers and controls. Serum NT-proBNP was correlated with both the duration and the amount of exposure to second-hand smoke ($r = 0.313$ and 0.763 , $P = 0.015$ and 0.0001 , respectively).

Interpretations and conclusion

These results showed that exposure to second-hand smoke could increase serum levels of NT-proBNP. Accordingly, an elevated NT-proBNP could be a strong predictor of Lv dysfunction in passive smokers.