

P16. Industrial toxic exposures and cardiotoxicity

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Human is constantly interacting with the environment from beginning of life to the day. This interaction is often negatively affected. By the end of the nineteenth century, human beings had only 50 years of life expectancy at birth. Infant, child and maternal mortality were high in recent years, mostly due to bacterial, parasitic diseases. Life expectancy in Turkey is 78 ± 2.7 years as of 2013-2014. Industrialization and socio-economic development have prolonged human life and improved the quality of life. Today, the concrete relationship of many physical and chemical agents with diseases is clearly defined.

Increasing industrial production and end use 'exposure' has shown dramatic increase especially in the last 50 years. Metals generally affect more than one organ and system. For that, the "target or critical organ" in metal poisoning is used for the site of action which is most sensitive to that metal. Neurotoxicity, nephrotoxicity, gastrointestinal toxicity, fetotoxic and teratogenic effects, cytotoxicity and immunotoxicity are possible damages. There are also significant toxic effects on the cardiovascular system.

Lead is effective in inducing endothelial dysfunction and acting as calcium agonist in cardiovascular system. Clinically, systolic and diastolic blood pressure rises. It causes ischemic heart disease, left ventricular hypertrophy and diastolic dysfunction, electrocardiogram changes and cardiac arrhythmias. Arsenic has a proliferative effect on the vascular system. Clinically, systolic and diastolic blood pressure rises.

Cardiovascular mortality, peripheral atherogenesis, coronary heart disease, atypical ventricular tachycardia increases. Mercury causes endothelial dysfunction, inflammation and thrombosis. Hypertension, coronary artery diseases and myocardial infarction, stroke and carotid artery diseases, cardiac autonomic nervous system involvement and cardiac arrhythmia are predisposed.

Further studies using biomarkers to investigate the effect of specific metal on specific cardiovascular endpoints in this context, which are made in the large population, analyzed by excising other risk factors, and mechanistic and pathogenic explaining are needed.

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