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Cardiotoxic drugs in India

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Abstract:

Cardiotoxicity with clinically used drugs are quite common and concerning. Cardiac involvement can be seen in most of the drug toxicities. Anticancerous drugs like Anthracyclines, Trastuzumab, Cyclophosphamide, Paclitaxel, 5-Fluorouracil are the major cardiotoxic drugs. Tricyclic antidepressant, b- blockers, Calcium channel blockers, Digoxin and recreational drugs like Cocaine & Amphetamine are the other well established cardiotoxic drugs at higher doses.

Drug induced cardiotoxicity is seen in 20-25% of cases in various studies done in USA and India. It is one of the leading cause of death in India (3.89-4.3/100,000 population). The condition is much more alarming because of increased use of recreational drugs like Cocaine, Amphetamine and Cathinone. According to United Nations Office on Drugs and Crime (UNODC), there is mounting evidence that the region of Asia-Pacific and regions of India in particular are increasingly being used for illicit manufacture and use of recreational drugs. Polypharmacy, extremes of age, co-morbid cardiac illness, female sex and associated radiotherapy can further compound cardiotoxicity.

Drugs affect the performance of cardiac muscles by direct injury to the cardiac myocytes or by altering the ion channels and pumps. They can also produce cardiotoxicity by inhibiting the reuptake of biogenic amines, inhibiting various cardiac enzymes, increasing oxidative stress and apoptosis.

Cardiotoxic drugs cause increased incidence of myocarditis, pericarditis, hypertension and coronary artery disease. Left ventricular dysfunction, congestive heart failure, various arrhythmias, hypo & hypertension, acute pulmonary edema, cardiogenic shock and sudden cardiac death can be the presenting features of the patients.

Electrocardiography, hs-trop I, CRP, BNP, NT-Pro BNP, serum electrolytes should be done in most of the cases. Echocardiography with tissue Doppler is the main investigation to see ejection fraction and peak systolic longitudinal strain. Cardiac MR (CMR), endomyocardial biopsy are the other relevant investigations. Endomyocardial biopsy is rarely done because it is an invasive procedure and associated with major procedural complications.

Treatment variably includes supportive care with securing of airway along with maintenance of breathing and circulation (ABC). It should be followed by decontamination, antidotal therapy, and enhanced elimination techniques. Assistance can be obtained from regional poison control centers (in India it is the National poison control center, AIIMS having contact no-011-26593677 & 26589391). Early diagnosis and treatment with avoidance of possible cardiotoxic drug is key for a better clinical outcome of the patient.

Better pre-treatment screening, use of minimum possible effective dose, frequent monitoring, better drug designing, use of prophylactic therapy and health education will help in reducing drug induced cardiotoxicity.