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Assessment of Cardiac Autonomic Dysfunction in Breast Cancer Patients Undergoing Chemotherapy

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Abstract:

Breast cancer patients treated with standard chemotherapy protocol often present with signs and symptoms of autonomic dysfunction such as orthostasis, low blood pressure, gastroparesis & constipation all of which are grossly under-diagnosed. CAD is common and one of the least documented impairment in various malignancies and its associated chemotherapy. With progressive advancing disease the symptoms worsen and are associated with short survival rate. The present study aimed to evaluated cardiac autonomic functions in breast cancer patients on chemotherapy as early marker to evaluate CAD.

Methodology:
Study design: Case-Control. Cardiac autonomic function testing was performed in the autonomic function laboratory, Department of Physiology, All India Institute of Medical Sciences, Raipur. Biopotentials was recorded using a lead II electrocardiogram (ECG) and Photoplethysmography (PPG) in two groups, controls (n = 25 healthy female volunteers) and cases (n = 25 histologically proven stage I-III breast cancer patients, age 30-65 years, received three cycles of chemotherapy). Echocardiography was also recorded.

Results:
Patients on chemotherapy had significantly lower time domain (all parameters) and frequency domain (absolute total power) of HRV and PPG parameters compared to age-matched healthy controls. Autonomic reactivity showed significant loss in the patient group.

Conclusions:
Cardiac autonomic tests showed a significant loss in the patient group compared to the healthy controls. This may be because of the chemotherapeutic drugs taken by the patients or cancer as the disease per se. Our study showed that assessment of these tests is a reliable diagnostic and prognostic method for detecting and scoring early CAD in patients with breast cancer. Other prospective studies are needed to establish the relationship between CAD in patients with cancer and chemotherapy.