Strontium—Is it a new target for conduction abnormality? Medica Hospitals, Kolkata, India. Sanjeev S Mukherjee**,Dilip Kumar,Arindam Pandey,Debabrata Bera,Rana Rathore Roy,Soumya Patra, Rabin Chakraborty

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Introduction: Atrioventricular block (AV) is a common problem worldwide requiring permanent pacemaker implantation, which results in huge economic burden on society. Interestingly the prevalence of this condition in Eastern part of India has been highest compared to rest of country. In statistical terms the incidence is as high as 42% compared to overall incidence in India(1). There has been lot of discussion about high consumption of mustard oil being contributory to this phenomenon. This is related to high erucic acid content which results in fibrosis of conduction system (1). We think there are other factors which too can be contributory including heavy metal levels in blood.

Methods: We retrospectively included patients who had permanent pacemaker implanted from August 2017 to January 2019 in our institute. We collected dietary history and blood sample for heavy metal screen. None of the patients had any active malignancy treatment or wound infection. The patients continued their routine medications.

Result: There were total 81 patients who gave consent for blood sample collection and evaluation. 52 (64%) were males and 29 (36%) females. The mean age of patients was 67.37±9.72 years. 94% of participants were ethnic Bengali and 46% came from Kolkata district. The reason of permanent pacemaker implantation was AV nodal disease in 64 (79%) and 17 (21%) had sinus nodal disease. We screened 21 heavy metals but would concentrate on five which showed abnormal values. 11 had elevated strontium, 6 had arsenic, mercury in 5, cadmium in 2 and cesium in 2 participants. Out of above figures 4 patients had overlap of 2 or more abnormal elevated values in a single individual. We have accepted standard lab ranges as our cut-off as not much data is available on strict abnormal limits. The most interesting observation was that strontium was elevated in male sex with AV nodal disease with an unexplained trend, not achieving statistical significance.

Conclusion: Our observation suggests that heavy metal screening should be considered in areas which have high incidence of AV blocks requiring pacemakers. This can be an area of investigation for causal association. Mercury(2), Cesium and Arsenic has been shown to have affected conduction system in scattered case reports. Strontium due to its capacity to replace Calcium has been studied to have influenced myocardial contraction in animal studies. In our patients with involved conduction abnormality its elevated titre raises some serious questions and needs further epidemiological and post-mortem studies.