

Right Ventricular Changes In Standardized and Synthesized Electrocardiogram (ECG) among End Stage Renal disease (ESRD) Patients and their Association with Volume Overload , Mortality And Hospitalization

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Abstract

Background:

Around the world, numbers of end stage renal disease patients(ESRD) are increasing over time and Palestine is not an exclusion. The mortality rate caused by cardiovascular disease in those patients is higher than that of the general population. Despite the huge morbidity and premature mortality that result from the cardiovascular complication in end stage renal disease patients on dialysis . a little is known about the prognostic importance of right ventricular function, although its function is an independent predictor of mortality and morbidity in ESRD patients with volume overload. Right ventricular (RV) function is a powerful prognostic marker, but its noninvasive evaluation through simple tools like ECG is still difficult.

Objectives:

To assess the relationship between the number of standard and synthesized ECG RV changes and volume overload represented by UF, prognoses of end stage renal disease patients represented by mortality and hospitalization

Methods:

It is a prospective observational convenient study. consisted of all end stage renal disease patients who are on dialysis at NNUH, whose aged above 18 years(146 patients) .137 patients underwent both standard and synthesized ECG .This was done three times one right before dialysis session and one right after the same dialysis session then one done 6 months later right after dialysis session. R:S ratio in V5 <.75mm or v6 <.4mm, Tall R wave in V1 >6mm, p pulmonale >2.5mm in lead 2, negative T wave in V1 through V3, deep S wave in V5 >10mm or v6 >3mm, S>R in V1 V2 V3 were identified from standard ECG . Right ventricular Q wave, Right ventricular ST elevation, Right ventricular negative T wave were identified from synthesized ECG, and these data were correlated to UF ,mortality and hospitalization

Results:

Total number of patient is 137 . (43.1%) were females and (56.9%) were males. The mean age of the participants was 56 years. (54.7%) had DM and (69.3%) had HTN. (31.4%) were on dialysis for one year or less and (67.2%) were on dialysis for more than one year. The mean for ultra filtration was 3673 ml. (26.3%) were hospitalized , (6.6%) due to cardiac. (5.5%)died , (2.74) due to cardiac cause. The study revealed that there is no statistical significant difference (p value>.05)between the number of pathological synthesized ECG changes and volume overload represented by UF , mortality . On the other hand it was found that there is statistical significant difference (p value : 0.001) between the number of pathological synthesized ECG changes and the number of hospitalization either the cause of hospitalization cardiac or non cardiac. There is no statistical significant difference (p value>.05)between the number of the terms of right ventricular hypertrophy standard ECG parameters and either volume overload represented by UF or mortality or number of hospitalization either the cause of hospitalization cardiac or non cardiac.

Conclusion:

Right ventricular ECG changes in synthesized ECG with right- sided leads (V3R-V5R) among end stage renal disease patients were significantly associated with cardiac hospitalization but not with mortality. Synthesized ECG is a good and easily performed tool that may predict cardiac hospitalization among patients with ESRD.

Keywords:

right ventricle, prognoses, volume over load, mortality, hospitalization, synthesized ECG, standard ECG, DM, HTN, duration of dialysis, age, sex.