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Comparison of Right Tei Index Between Normal Individuals and Patients with Pulmonary Disease

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ABSTRACT

Background: *Tei index is an echocardiographic indicator for studying the function of ventricles. In most studies ,left Tei measurement was used to evaluate cardiac function in patients with heart failure, where its increase indicates left ventricular involvement. The following study was designed to compare right Tei index in healthy people with that of pulmonary patients in order to determine the effects of pulmonary diseases and their consequent cardiovascular complications.*

Materials and Methods: *The study population included 78 pulmonary patients and 37 normal individuals. Doppler-echo imaging was performed by VingMed set, model CFM750 for all patients and the information was recorded in data sheets. Finally, results were analyzed by SPSS statistical software package, version 9.0.*

Results: *The mean (±SD) of age in the pulmonary patients and normal individuals was reported 49.28 ± 19.11 and 36.57± 15.46 respectively. Meanwhile, Tei index was revealed to be independent of age, sex, ventricular geometry, pulse, and blood pressure, thus no interference resulted from intervening factors. The mean (± SD) of right Tei index was measured 0.47± 0.25 and 0.38± 0.16 in the pulmonary patients and normal individuals respectively.*

Conclusion: *Regarding the difference found between Tei index of these two groups, it seems as if significant change in Tei index is strongly associated with pulmonary disease. Therefore, it is worth surveying, the correlation between Tei index and other cardiac indices in pulmonary disease.* ***(Tanaffos 2002;1(1):46-49)***

Keywords: *Right Tei index, Normal individuals, Pulmonary disease*

INTRODUCTION

The asymmetric feature of the right ventricle and its location has made common indices for left ventricle function studies such as ejection fraction, fractional shortening or Simpson volume change assays to be ineffective for evaluating right ventricle function(1,2).Regarding independence of left ventricles Tei index from ventricular geometry and on the basis of reports considering effectiveness of Tei index in right ventricle pressure and volume overload(4,5,6), a study was designed to compare right Tei index measurement in two groups: the healthy individuals and the patients with pulmonary diseases.As it is shown in figure 1, to calculate the sum of IVC and IVR , the ejection time could be

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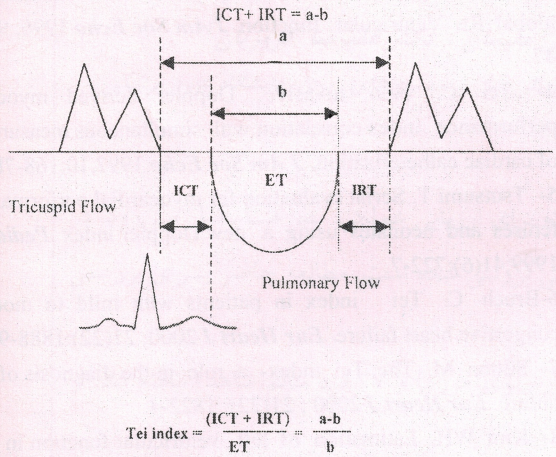
subtracted from the whole systole duration. Systole time may be measured from the interval between the two consequent flow of tricuspid valve and the ejection time is obtained from pulmonary valve flow time (3,8,9,11).



Schema of Doppler time intervals.The Tei index is the interval between cessation and onset of the mitral inflow.b= left ventricular ejection time.ICT=Isovolumetric Contraction Time, IRT= Isovolumetric Relaxation Time,ET= Ejection Time

MATERIALS AND METHODS

Between March 2000 and March 2001, a total of 115 patients were referred to the echocardiography clinic of Massih-Daneshvari Hospital. Echocardiographic right Tei index as well as other variables, including age , sex,...were studied. The study population included 78 as pulmonary patients and 37 as normal individuals.Pulmonary diseases consisted of COPD, tuberculosis,sarcoidosis,bronchiectasis,andmalignancies. In the normal group , not even a trace of positive pathologic finding was elicited in history and physical examination .Results were recorded in special data sheets.

All patients underwent echocardiography in left lateral position by VingMed apparatus, CFM 750,using3.25 MHZ probe. 5-10images were obtained from each patient.

Measuring Tei index require at least 5 images obtained from each position.Finally, our data were analyzed by SPSS statistical software package, version 9.0 and were reported using frequency, Cross Tab and Correlate (One Way ANONA) options.

RESULTS

The results are summarized in table1. The pulmonary patient population comprised of 48 women and 30 men with mean age (± SD) of 49.28±19.11 years, whereas, the normal individuals were included 26 women and 11 men with mean age (±SD) of 36.57 ± 15.46 years.

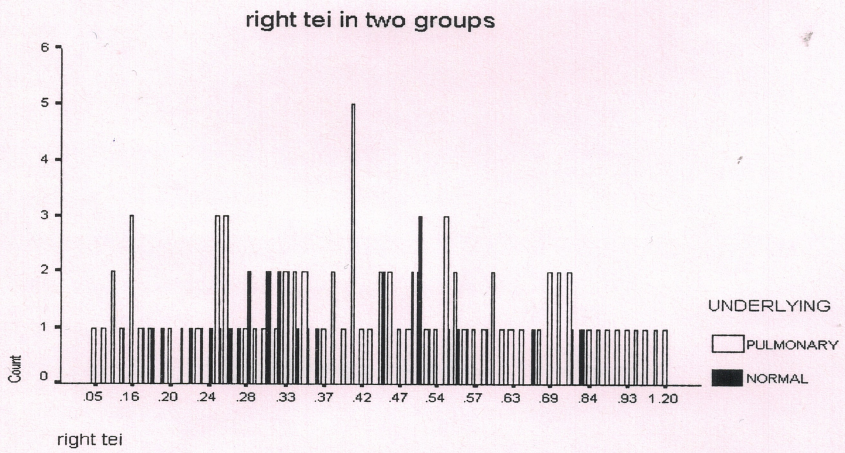


Fig 1. Frequency of right Tei results in healthy and pulmonary groups

Table 1. Mean and Standard Deviation (S.D)of right Tei Index and age

Condition		Right-Tei	Age
Pulmonary	Mean	0.4704	49.28
	N	78	78
	S.D	0.2476	19.11
Normal	Mean	0.3822	36.57
	N	37	37
	S.D	0.1642	15.46
Total	Mean	0.4532	46.72
	N	134	134
	S.D	0.2234	19.14

DISCUSSION

Significant increase ($p<0.05$) of right Tei index in these patients when comparing with normal individuals have implied that these changes should not be considered as a terminal phenomenon,indeed, these changes are developed gradually regardless of the underlying pulmonary disease.The mean (± SD) of right Tei index was measured 0.47± 0.25 and 0.38± 0.16 in these patients and normal individuals, respectively; however, this index was ranged 0.05-1.2 in patients with pulmonary disorders and 0.13-0.78 in normal individuals(Fig 1).

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