INTRODUCTION

Introduction

Chronic obstructive pulmonary disease (COPD) is a disease state characterized by air flow limitation that is not fully reversible.

The air flow limitation is usually both proggressive and associated with an abnormal inflamatory response of the lung to noxious particles or gases ***(WHO, int J Cardiol. 2003)***.

Pulmonary arterial hypertension (PAH) is the primary cardiovascular complication encountered in chronic obstructive pulmonary disease. . The prevalence of (PAH) increase as COPD worsens, and the development of PAH and cor pulmonal appears to affect of survival of patient with COPD, Cor pulmonal can range clinically from mild changes in right ventricular function to frank right heart failure ***(Lee chiong et al., 2002).***

Cardiac catheterization remains the "gold standard" for the measurment of pulmonary arterial pressure, pulmonary hypertension at catheterization being defined as resting mean pulmonary pressure $\geq$ 20 mm Hg or resting systolic pulmonary arterial pressure $\geq$ 30 mm Hg ***(Prichard et al., 1996).***

However, there are significant risks and cost issues associated with the procedure and, in any case, due to the high prevalence of COPD it would not be feasible to perform cardiac catheterization on every patient with moderate to severe disease. Moreover the technique dose not lend itself well to the repeated and temporally close measurements required in clinical trials of interventions in secondary PH. Thus, a reliable, reproducible, non-invasive technique for assessment of (PAP) would clearly be of great clinical and research value ***(Groves et al., 1996).***

Transthoracic echocardiography is a non invasive, inexpensive, easy, reliable and reproducible method, it is the most commonly non invasive diagnostic tool to determine PAP ***(Otto et al., 2004).***

Doppler echocardiography allows estimation of PAP by means of measuring tricuspid regurgitation velocity, and right ventricular outflow tract flow acceleration time. By use of the maximum velocity of the tricuspid regurgitant jet, pulmonary artery systolic pressure (PASP) is determined, and, via the right ventricular outflow tract acceleration time and pulmonary regurgitation, respectively, the mean and diastolic PAP are estimated ***(Masuyama et al., 1986).***

However, in various studies the PASP could be determined by echocardiography in less than half of the patients with COPD in contrast with other patient group***. (Arcasoy et al., 2003)*** and the most important limitation is the absence of adequate TR velocity ***(Rich et al., 2005).*** For this reason there is still need for an accurate method that is applicable to all patients.

Tissue Doppler Imaging (TDI) is an extension of conventional Doppler flow echocardiography and has been proven to be a useful and feasible clinical tool for assessing global and rgional left Ventricular systolic and diastolic function. It recently has emerged as a new method useful for predicting right atrial pressure and evaluation of right ventricular systolic and diastolic function ***(Moustapha et al., 2001)***.

Given the above-mentioned difficulties of the conventional doppler evaluation of PAP, Tissue Doppler imaging (TDI) emerged as a new and promising technique for estimation of Pulmonary artery pressure in patients with COPD ***(Melek et al., 2006)***.