

EFFECTS OF CHILDHOOD BRONCHIECTASIS ON CARDIAC FUNCTIONS

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

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Abstract

Bronchiectasis is a common structural end-point of many chronic respiratory diseases. Chronic hypoxia in these patients eventually may lead to pulmonary hypertension and consequently cor pulmonale. We enrolled thirty one patients with bronchiectasis as well as fourteen healthy control subjects were studied using echocardiography. Trans-thoracic two dimensional (2D) guided (Mmode) and Doppler echocardiography were performed for all patients. Right ventricular systolic and diastolic functions were impaired in most of our patients. Left ventricular diastolic function was impaired while left ventricular systolic function was preserved. The clinical score correlated significantly with most of parameters measured for the right ventricle and also correlated with R5.

Key words: Bronchiectasis; Echocardiography; Ventricular dysfunction.

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Abbreviations

3D	three-dimensional
6MWT	6 minute walk test
A. Fumigates	Aspergillus fumigatus
ABPA	Allergic bronchopulmonary aspergillosis
AIHA	Autoimmune haemolytic anaemia
Am	Late diastolic mitral annular velocity
ANOVA	Analysis of variance
Ao	Aorta
AOMV	Aorta maximum velocity
ASE	American society of echocardiography
ASL	Airway surface liquid
AT	acceleration time
At	late diastolic tricuspid annular velocity
ATD	α 1-antitrypsin deficiency
ATS/ERS	American Thoracic Society/ European Respiratory Society
AV	Atrioventricular
AVV	Atrioventricular valve
BAL	bronchoalveolar lavage
BDR	bronchodilator response
BMI	body mass index
BMPR	bone morphogenic protein receptor type II
CAV1	caveolin-1
CBAVD	congenital bilateral absence of the vas deferens
CCBs	calcium channel blockers
CF	cystic fibrosis
CFRD	cystic fibrosis–related diabetes mellitus
CFTR	cystic fibrosis transmembrane conductance regulator
cGMP	cyclic GMP
CHD	congenital heart disease
c-HRCT	Chest high-resolution computed tomography
CNS	central nervous system
CO	cardiac output
COPD	Chronic obstructive pulmonary disease
CPA	chronic pulmonary aspiration
CPET	cycle ergometry cardiopulmonary exercise testing
CPT	Chest physiotherapy

CTEPH	Chronic thromboembolic pulmonary hypertension
DecT	deceleration time
DHF	diastolic heart failure
DIOS	distal intestinal obstruction syndrome
DLCO	Diffusing capacity of the lungs for carbon monoxide test
Dnase	human deoxyribonuclease
EDV	end-diastolic volume
EF	ejection fraction
Em	early diastolic mitral annular velocity
ENG	endoglin
ET	ejection time
Et	early diastolic tricuspid annular velocity
ET-1	Endothelin-1
ETA	endothelin receptors type A
ETB	endothelin receptors type B
FB	Foreign body
FDA	Food and Drug Administration
FEES	fiberoptic-endoscopic evaluation of swallowing
FEV₁	forced expiratory volume in 1 second
FVC	forced vital capacity
HIV	human immunodeficiency virus.
HPOA	hypertrophic osteoarthritis
HR	heart rate
HRCT	high-resolution computed tomography
HS	Hypertonic saline
IBAs	Inhaled β-agonists
ICS	inhaled corticosteroids
ICT	isovolumic contraction time
Ig	Immunoglobulins
IgA	Immunoglobulin A
IL	Interleukin
IL-8	interleukin-8
ILD	interstitial lung disease
IOS	Impulse oscillometry
IRT	immunoreactive trypsinogen
IRT	isovolumic relaxation time
ITP	idiopathic thrombocytopenia
IVIg	intravenous immunoglobulin treatment
IVRT	Isovolumic relaxation time

IVSd	interventricular septal thickness
JVP	Jugular venous pressure
LA	left atrium
LABA	Long acting β -agonist
LTB4	leukotriene B4
LTOT	Long term oxygen therapy
LV	left ventricle
LVDd	left ventricular diastolic diameter
LVPWd	Left ventricular posterior wall
LVRS	Lung volume reduction surgery
MAE	mitral annulus excursion
MAPSE	Mitral annular plane systolic excursion
MBL	mannose binding lectin
mPAP	Mean pulmonary artery pressure
MPI	myocardial performance index
MRI	magnetic resonance imaging
NAC	N-Acetylcysteine
NBS	Newborn Screening
NCFB	non cystic fibrosis bronchiectasis
NK	natural killer
NO	nitric oxide
NP	nasopharyngeal
NPD	Nasal potential difference
NSAIDs	Non steroidal anti-inflammatory drugs
NTHi	Nontypeable Haemophilus influenzae
NYHA	New York Heart Association
NZ	New Zealand
P. aeruginosa	pseudomonous aeruginosa
PA	pulmonary artery
PA	Posteroanterior
PAD	primary antibody deficiency
PAH	Pulmonary arterial hypertension
PAMPs	pathogen associated molecular patterns
PAP	pulmonary artery pressure
PC	pulmonary circulation
PCD	Primary ciliary dyskinesia
PCR	Polymerase chain reaction
PCWP	pulmonary capillary wedge pressure
PDE 5 inhibitor	phosphodiesterase 5 inhibitor

Peak A	peak flow velocity during atrial contraction
Peak E	Peak velocity at early diastole
PEF	peak expiratory flow
PH	pulmonary hypertension
PMNs	polymorphonuclear neutrophils
PPHN	persistent pulmonary hypertension of the newborn
PRMC	Pulmonary radioaerosol mucociliary clearance
PRRs	pattern recognition receptors
PVR	pulmonary vascular resistance
PVRi	pulmonary vascular resistance indexed for body surface area
QS	quorum sensing
R	resistance
RA	right atrium
RHC	Right heart catheterization
RV	residual volume
RV	right ventricle
RV-ASI	Right ventricular automated systolic index
RVDD	Right ventricular diastolic diameter
RVFAC	Right ventricular fractional area change
RVMPI	right index of myocardial performance
SF	shortening fraction
SIL	Sildenafil
SLPI	secretory leukocyte proteinase inhibitor
SP-A	surfactant protein-D
SPSS	statistical program for social science
SR	Strain rate
SV	stroke volume
SVR	systemic vascular resistance
TAPSE	Tricuspid annular plane systolic excursion
TAPSE	Tricuspid annular plane systolic excursion
TBM	tracheobronchomegaly
TDI	tissue Doppler imaging
TEF	tracheoesophageal fistula
TGF	transforming growth factor
TLC	total lung capacity
TMP-SMX	Trimethoprim sulphamethoxazole
TNF	tumour necrosis factor
TPG	transpulmonary gradient

TR	tricuspid regurgit gradient
TR	peak tricuspid regurgitation gradient
TTE	Transthoracic doppler-echocardiography
V/Q	ventilation perfusion
VSS	Video fluoroscopic swallowing studies
VTI	velocity time integral
WU	Wood Units
X	reactance
XLA	X-linked agammaglobulinemia
α 1-PI	α 1-protease inhibitor

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