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PROGRESS REPORT

Project / Program Title		Pulmonary artery pulsatility as a predictor of survival following hospitalised exacerbation of Chronic Obstructive Pulmonary Disease
Name		Dr Paul Leong
Award Received		2018 RACP NHMRC Dixon Award for Excellence
Report Date		21 May 2019
Chief Investigator / Supervisor		Prof Philip Bardin
Administering Institution		Monash University
Funding Period	Start Date:	5 February 2018
	Finish Date:	4 February 2021

PROJECT SUMMARY

Many patients with Chronic Obstructive Pulmonary Disease (COPD) also have elevated lung blood pressures, or pulmonary hypertension (PH). Having both conditions increases the risk of death. It is difficult to diagnose PH in COPD. We will be using a new Computed Tomography (X-ray imaging) technique to investigate a marker of PH called 'pulmonary artery pulsatility'. If PH can be diagnosed easily and accurately new treatments can be devised and researched potentially improving outcomes in COPD.

PROJECT AIMS / OBJECTIVES

1. To prospectively validate pulmonary artery pulsatility (PAPuls) as an objective predictor of survival following hospitalized acute exacerbations of COPD (AECOPD)
2. To assess PAPuls as an objective predictor of repeat COPD exacerbations
3. To test the performance of PAPuls measurement compared to basic PA diameter measurement to predict clinical outcomes post AECOPD
4. To compare PAPuls as a predictor of outcomes post AECOPD compared to alternative parameters of cardiac dysfunction measured simultaneously by 256-MDCT (coronary artery calcium score, right and left ventricular function, aortic distensibility)

All of the above projects centre on recruiting a cohort of AECOPD. 79/152 have been recruited to date.

SIGNIFICANCE AND OUTCOMES

Studies will therefore enhance our understanding of the intersection between cardiovascular dysfunction and COPD. Moreover, these investigations can potentially identify cardiac imaging biomarkers that can be utilised for important and testable hypotheses. Finally, since many patients with COPD have occult cardiac disease, studies of targeted diagnostic strategies will create opportunities to investigate optimal treatments for coexisting cardiac disease in COPD.

Further projects have been identified and are actively recruiting. In brief these are:

1. Cross validating CT-derived pulmonary artery pulsatility against magnetic-resonance derived pulmonary artery pulsatility
2. Describing coronary plaque morphology in patients with chronic obstructive pulmonary disease without overt coronary artery disease

PUBLICATIONS / PRESENTATIONS

1. Leong P, MacDonald MI, Ko BS, Lau KK, Troupis JM, Bardin PG. Single-breath comprehensive cardiopulmonary assessment utilising computerized tomography. Respirology 2019; 24.

2. Leong P, Macdonald MI, Ko BS, Bardin PG. Coexisting chronic obstructive pulmonary disease and cardiovascular disease in clinical practice: a diagnostic and therapeutic challenge. Med J Aust 2019; mja2.50120.