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Title: The effects of sildenafil on lung function in COPD

Dr. Andrew 23425 Goudie goud@doctors.org.uk [1], Mrs. Pippa 23426 Hopkinson P.Hopkinson@dundee.ac.uk [1], Dr. William 23427 Anderson Wanderson@nhs.net [1], Prof. Brian 23428 Lipworth brianlipworth@gmail.com [1] and Prof. Allan 23429 Struthers a.d.struthers@dundee.ac.uk [1]. [1] Centre for Cardiovascular and Lung Biology Research, University of Dundee, United Kingdom .

Body: Background Sildenafil is a pulmonary vasodilator drug used to treat pulmonary hypertension (PH) via PDE5 inhibition. Zaprinast, the precursor to Sildenafil, has moderate bronchodilator effects in exercise induced asthma. A recent study investigating the haemodynamic effects of sildenafil in COPD associated PH (COPD-PH) noted small but significant improvements in FEV1 and FVC. Aims To study the effects of sildenafil on bronchodilation and gas trapping in those with COPD-PH. Methods COPD patients were invited for echo. RVSP>30mmHg and/or a pulmonary acceleration time of <120ms defined PH. Subjects with COPD-PH were given 50mg of sildenafil(PO). Spirometry was recorded at 0.5, 1(C_{max}) and 3 hours (t½). Results A total of 33 patients were studied, 61% male. Baseline spirometry: FEV1(l) 1.13(SD 0.41), FEV1% 45%(14.7), FVC(l) 2.75(0.76), FVC% 86.3%(17.2), slow VC(l) 2.77(0.85), slow VC% 84.9(18.3). Slow VC significantly increased by 163ml [95%CI 29-297] p=0.01 and 149ml [95%CI 19-280] p=0.018 at 0.5 and 1 hours respectively. FEV1 significantly increased by 51 ml [95%CI 16–86] p=0.002 and 78 ml [95%CI 40-116] p=0.000 at 0.5 and 1 hours respectively. No significant changes were noted for slow VC/FEV1 at 3 hours.

Conclusion Acute sildenafil use resulted in transient airways dilatation and reduced gas trapping. In the absence of placebo control, spirometric changes due to natural variability cannot be ruled out, although the return to normal at 3 hours suggests a real effect.