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Title: Safety and efficacy of sputum induction in COPD patients

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Body: Introduction There is lack of studies addressing safety issues in performing sputum induction on COPD patients. Aim: To determine the efficacy and safety of a sputum induction protocol in COPD patients. Methods Ex-smokers with a diagnosis of COPD who had not experienced an exacerbation or an upper respiratory tract infection in the preceding 28 days, and who had a post-bronchodilator FEV1 ≥40% predicted were enrolled. A Norditalia ultrasonic nebuliser was used to deliver up to 3 5-minute nebulisations of 4.5% saline following inhalation of 400mcg Salbutamol. Induction was discontinued if FEV1 fell by more than 20% as compared with baseline; if the subject experienced discomfort due to wheeze, shortness of breath or chest tightness; or when three nebulisations had been administered or an adequate sputum sample had been obtained – whichever was sooner. Results Sputum samples sufficient to prepare a cytospin slide were obtained in 43/45 patients. 6/43 patients required one 5-minute nebulisation, 19/43 patients required two 5-minute nebulisations and 18/43 patients required three 5-minute nebulisations. The sputum induction protocol was discontinued in 9 patients, either because FEV1 fell below 80% of the baseline value (n=7) or because the patient developed wheeze or chest tightness (n=2). Rescue medication was administered in 14/45 inductions. Only one patient developed an exacerbation that was attributed to preceding sputum induction. Conclusions Sputum induction with nebulised 4.5% saline is effective and well tolerated in patients with COPD. Sputum samples were obtained with less than three rounds of nebulisation using this protocol in the majority of COPD patients.