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The utility of drug reaction assessment trials for inhaled therapies in patients with chronic suppurative lung diseases

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Patients with chronic suppurative lung disease are prescribed inhaled therapies to aid airway clearance and prevent infective exacerbations. Current clinical guidelines recommend that all patients undergo a drug reaction assessment (DRA) before beginning inhaled therapies to assess for bronchoconstriction and tolerability. There is limited evidence evaluating the utility of DRA trials. In this study, we aimed to establish the clinical and respiratory parameters associated with successful DRAs, for patients with chronic lung disease being prescribed inhaled therapies. This study was designed using a retrospective cohort, whereby all DRAs performed in adults >18 years between April 2011 to March 2016 at the Royal Brompton Hospital were assessed. A multivariable logistic regression model was constructed to ascertain variables associated with a successful DRA. A sample of 1492 patients undergoing a DRA trial using hypertonic saline (32%), antimicrobials (63%) or rhDNAse (5%) were recruited. Majority of the patients (94%, n=1408) passed the DRA. COPD, bronchiectasis, and cystic fibrosis accounted for most underlying diseases in this cohort. Female sex, type of inhaled product, and % predicted FEV_1 were established as significant predictors for DRA success. An FEV_1% predicted >55% was associated with greater probability of DRA success (odds ratio [OR]: 2.96 (95% CI: 1.80–4.86) p<0.0001). These results were maintained regardless of the type of inhaled therapy. Those receiving dry powder inhaled antibiotics were more likely to pass the DRA compared to nebulized antibiotics (OR: 3.99 (95% CI: 1.38–11.51) p= 0.01). We demonstrated the predictive value of FEV_1 and identified the optimal cut off 55% to aid clinicians when determining the need for a DRA. These "low risk" patients may in future be advised to self-assess their tolerability for the inhaled therapy within their home and use a bronchodilator prior and after the therapy if deemed necessary.

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