Nebulised N-acetylcysteine for unresponsive bronchial obstruction: case series and review

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Background:

The National Aspergillosis Centre Manchester United Kingdom treats people with a variety of manifestations of aspergillosis. Here physiotherapists facilitate the provision of NAC to patients with chronic pulmonary aspergillosis (CPA) who produce viscid, or inspissated mucous secretions. Nebulised NAC has been used in patients with chronic obstructive pulmonary disease and cystic fibrosis with variable results. There is no published data on the use of NAC in patients with Aspergillus lung disease

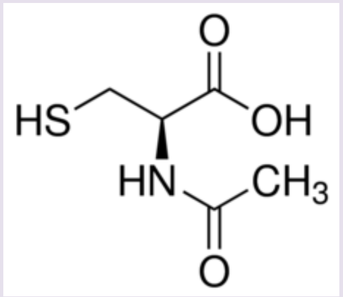

Figure 1: Chemical structure of NAC

Materials/methods:

This was a retrospective review of six Caucasians treated at the National Aspergillosis Centre with NAC between November 2015 and November 2017. There were 4 males and 2 females with an average age of 54.7 years. All patients had failed other treatments to improve these mucus secretions.

Results:

The diagnosis of these patients ranged from allergic bronchopulmonary aspergillosis (ABPA) [3 patients], CPA [1 patient] and aspergillus bronchitis (1 patient). One of the patients had ABPA/CPA overlap disease. One patient developed immediate bronchospasm on first dose and could not be treated. Of the remainder, two (33%) derived benefit, with increased expectoration and reduced symptoms. Continued response was sustained over 4-7 months, without any apparent toxicity (Table 1).

Figure 2: CT thorax showing extensive mucus plugging within the left lower lobe. There is further unchanged scattered mucus plugging within the middle lobe and lingula and anterobasal segment of the right lower lobe associated with bronchiectasis.

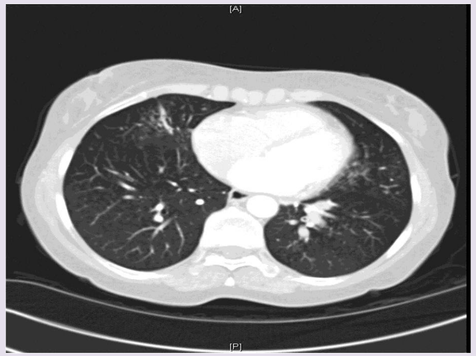

Table 1: characteristics of patients in National Aspergillosis Centre Manchester treated with 20% NAC twice a day

Sex	Age	Diagnosis	Co-morbidities	Duration of NAC use	Outcome
Female	50	CPA , ABPA	Asthma Bronchiectasis Adrenal insufficiency Previous left upper lobectomy for bronchiectasis	14 days	Discontinued. No change in symptoms
Male	63	ABPA	Asthma Coeliac disease Sinusitis Hypertension Vitamin D deficiency Liver cysts Hyperaldosteronism	1	Failed initial challenge
Female	59	ABPA	Asthma Vocal cord dysfunction Bronchiectasis Tracheal stenosis	3 weeks	Discontinued. No change in symptoms
Male	47	ABPA	Right upper lobectomy	1 week	Discontinued. No change in symptoms
Female	57	*Aspergillus terreus* and *Trichoderma* bronchitis	Hypothyroidism Migraine Bronchiectasis	7 months	Well tolerated, increased expectoration of phlegm
Female	52	Possible CPA	Glaucoma Spinal disc prolapse Previous left sided iatrogenic pneumothorax	4 months	Well tolerated, increased expectoration of phlegm

CPA= chronic pulmonary aspergillus
ABPA= allergic bronchopulmonary aspergillosis

Figure 2: CT thorax showing severe multilobar bronchiectasis with accumulation of high attenuation mucus forming bronchoceles predominantly within the right upper lobe, the right lower lobe and the left upper lobe.

Conclusion:

NAC may hold some benefit for patients with aspergillus lung disease who have viscid mucus secretions