Early experience of Methacholine Challenge Test [MCT] in Princess Margaret Hospital [PMH]: An accurate diagnostic tool at low cost for asthma

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Introduction
Cough variant asthma is an important cause of chronic cough. Bronchial hyperresponsiveness [BHR] is one of the features that may contribute to a diagnosis of asthma. MCT is most often considered when asthma is a serious possibility and traditional methods have not established or eliminated the diagnosis. When a sodium chloride solution containing methacholine chloride is inhaled, subjects with asthma are markedly more sensitive to methacholine induced bronchoconstriction than are healthy subjects. MCT has high negative predictive value to exclude asthma.

Objectives
Methacholine challenge testing is useful in excluding a diagnosis of asthma in patients with chronic cough.

Methodology
MCT was first launched in PMH at May 2014. We adopted the “Five breath dosimeter protocol” published by American Thoracic Society at 1999.

Result
Up to Jan 2015, five female & two male patients have undergone this test and total Ten MCTs have been done. MCT have been repeated in three patients due to their suboptimal technique. The age of patients ranged from 41 to 56 years old. All did not have any significant medical co-morbidities or past personal history of asthma. The major indication [6 out of 7 patients] for these MCTs was unexplained chronic [> 3 months] dry cough. All patients had normal baseline spirometry results without further significant response to bronchodilator. Their CXR & XR nasal sinuses were
unremarkable. Three out of five patients had eosinophil found in their sputum [i.e. range from scanty to numerous]. Two out of four patients had positive blood tests for Aeroallergen screening. Only one patient had positive MCT result [i.e. PC20=16mg/ml, PD20=0.7374mg] which was compatible with “borderline to mild” BHR. Three patients had negative MCT, thus their current symptoms were NOT due to asthma [i.e. cough variant]. No definitive conclusion could be drawn in remaining three patients because they could not trigger complete delivery of Methacholine. There was no serious complication resulting from MCT. Conclusion: MCT is a useful and safe diagnostic test [i.e. mainly rule out] of asthma provided that appropriate patient selection and precaution have been taken. Accurate diagnostic label could remove unnecessary psychological stress from patients and avoid side effect of unnecessary treatment. Each vial of Methacholine costs HKD 600 only.