Viruses are implicated as important causative pathogens for acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Modern molecular diagnostics such as the Reverse-transcriptase multiplex polymerase chain reaction (RT-mPCR) are highly sensitive tools for rapid diagnosis of these pathogens.

In view of the sparse data regarding the prevalence of viruses in respiratory diseases such as COPD from the South-east Asian region, we aimed to detect the incidence of the major respiratory viruses via RT-mPCR in hospitalized patients with AECOPD and its impact on hospital related outcomes such as mortality and the requirement of mechanical ventilation.

A total of 137 patients admitted with the diagnosis of AECOPD were recruited over a 3-year period. Each patient was classified as having type I, II or III exacerbation according to the definition proposed by Anthonisen et al. Patients were followed up to discharge from hospital or till death. Nasal-pharyngeal aspirates (NPAs) / Endotracheal aspirates (from ventilated patients) were collected within 7 days of onset of symptoms, and the presence of seven common respiratory viruses, i.e. Influenza A, Influenza B, Respiratory syncytial virus (RSV), Parainfluenza virus 1, 2, and 3 (PIV1, PIV2, PIV3, and human metapneumovirus (hMPV) were tested using self-designed primers using multiplex RT-PCR. The primers were used in two slots (slot I -Inf A, Inf B, RSV; slot II -PIV1, PIV2, PIV3 and hMPV) and designed to ensure that the size of amplicon of each virus was different and annealing temperature of primers almost same in their respective slot.

A total of 137 patients were evaluated, with a mean age was 62.3 (11.4) years, comprising 78.8% males. Majority (81%) were current/previous smokers and were using inhaled long-acting bronchodilators (77.4%) and inhaled steroids (54%). None had any previous records of having received annual influenza vaccination.

Most of subjects had type I exacerbation (40%), followed by type III (34.5%) and type II (25.5%). The median (range) duration of hospital stay of the entire group (excluding non-survivors) was 7 (1-110) days; 71 patients (51.8%) needed mechanical ventilation; 46 patients (33.6%) eventually succumbed to their illness in hospital.

A total of 16 patients tested positive for virus, giving a prevalence of 13.1%. Influenza was the commonest virus detected ($n=11$; 8%), followed by Parainfluenza virus 1 ($n=3$; 3.6%), RSV, and PIV3 ($n=1$ each). Patients with virus positivity were younger, had female preponderance, shorter duration of hospital stay, higher proportion of type III (milder) exacerbation, and lesser use of inhaled steroids. However, only the difference in age and use of inhaled steroids were statistically significant.

The prevalence of virus infections in our group is less compared to most previous Western reports, wherein picornavirus has been demonstrated as the commonest pathogen detected. A previous systematic review calculated a weighted mean prevalence of viral infections in AECOPD from eight studies across Europe, USA, Australia, and Asia at 34.1%. However, our findings compare well with a recent study from Kashmir, which reported an 8% frequency of influenza detected among hospitalized patients with AECOPD and were associated with higher mortality.

Clinically relevant outcome measures, such as mortality, requirement of mechanical ventilation, and duration of hospital stay were comparable between virus-positive and -negative groups.

Inspite of some limitations such as incomplete data on spirometry and influenza vaccination among the patients, this study provides important information regarding the prevalence of viruses in AECOPD patients and their clinico-demographic associations, including mortality.

It can be concluded thereby, that viruses are important etiological agents for AECOPD, have a predilection for affecting younger patients and those using inhaled steroids, but do not significantly affect hospital outcomes.

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Chronic cough: An Indian perspective

Sir,

We read with great interest the recent excellent review article on the management of chronic dry cough.[1] We support the use of the concept of “cough hypersensitivity syndrome” in routine clinical use. Other than suggesting a universal mechanistic explanation for chronic cough, it also offers a novel therapeutic target.[2,3] Capsaicin cough challenge tests unfortunately neither have the requisite sensitivity nor specificity to aid in the diagnosis of cough hypersensitivity,[4] as alluded to in the review. Although as a group, patients with chronic cough are clearly more sensitive as compared to healthy volunteers, there is a wide variation in the cough group as well as in healthy volunteers precluding the use of capsaicin cough challenge as a diagnostic test.[5] Indeed, any of the common tussive challenges evaluated (capsaicin, citric acid, tartaric acid, and distilled water) do not offer a “diagnostic test” and this is a very important, as yet unmet, clinical need.

There are some merits in regarding chronic cough as a neuropathic disorder.[6] Extrapolating its use in chronic pain where the suggested pathogenesis is similar to “cough hypersensitivity,” Ryan et al. demonstrated successful outcomes in the treatment of chronic cough with gabapentin.[7] This was a double-blind, randomized, placebo-controlled trial. Gabapentin is a familiar drug to most physicians and is now a medication that may be considered for use in chronic refractory cough. P2X3 receptors are expressed by airway vagal afferent nerves and may contribute to cough hypersensitivity. In a very promising study, it has been recently demonstrated that a first-in-class oral P2X3 antagonist, AF-219, markedly reduces cough frequency. This was based on an objective cough recording.[8] This drug is currently being evaluated in a large multicentric trial and hopefully the results should be available soon.

Concomitantly, we may also need to take an India-specific perspective. In our recent systematic review and meta-analysis on the global epidemiology of chronic cough in general adult populations, we had identified four studies that met the requisite criteria for inclusion from India. Compared to the pooled global prevalence of 9.6%, that from India was less than 5%.[9] It would be erroneous to draw any definitive conclusions regarding the relatively lower prevalence; this needs a multinational prospective survey with a standardized protocol. Several studies have suggested the risk factors that are particularly applicable to India such as the use of biomass fuel, outdoor air pollution and beedi smoking.[10‑15] Respiratory symptoms, including cough, are more commonly reported by beedi smokers as compared to cigarette smokers.[16] There could be many