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Early Intervention in Chronic Obstructive Pulmonary Disease

Toronto - Chronic obstructive pulmonary disease (COPD) is persistently under-diagnosed and therefore under-treated. By the time it is diagnosed, most patients have irreversible lung damage and interventions including smoking cessation can do little to reconstitute lung function. Physicians need to be wary of COPD in all smokers and ex-smokers 40 years of age and older and send those with suspected COPD for spirometry. Although not possible in all patients with COPD, a reduction in the rate of decline in lung function does appear to be possible in patients <50 years old who are treated with a long-acting anticholinergic agent in addition to other respiratory medications. Other comorbid conditions frequently occur in those with COPD and physicians must be vigilant about their potential presence and manage them appropriately when identified.

Studies have consistently demonstrated that chronic obstructive pulmonary disease (COPD) is under-diagnosed. In Canada, it is estimated that 1.5 million Canadians already have COPD and an equal number are likely to have it but have not yet been diagnosed. More importantly, the diagnosed patients are identified at a stage when lung function is already significantly and irreversibly impaired. “By the time patients recognize they have symptoms, their FEV₁ has usually fallen to about 50% predicted—a level where health status is already reduced,” indicated The International Primary Care Respiratory Group (IPCRG) (Kaplan et al. November 17, 2009. Opinion Piece V: “Early diagnosis of COPD does help!”).

Further confounding the opportunity to identify COPD early is the changing face of COPD. According to Dr. Rupert Jones, Clinical Research Fellow, Peninsula Medical School, Plymouth, UK, “Current perception is that COPD occurs in the elderly male, but more women die of COPD now than men and it is occurring at a much younger age than we think.”

Early Diagnosis Is Key

Yet early intervention with multiple strategies, including smoking cessation, exercise and nutritional support, can help prevent the inevitable deconditioning that occurs once patients become short of breath. Once they develop breathlessness, the pattern tends to spiral downwards into increasing exacerbations, greater withdrawal from daily activities and poor quality of life, as Dr. Jones noted.

The control arm in studies such as UPLIFT (Investigators in the Understanding Potential Long-Term Impacts on Function with Tiotropium) also show that decline in lung function is much faster in patients with Global Initiative for Chronic Obstructive Lung Disease (GOLD) stages I and II COPD than in stages III and IV.

“If this is true, our window of opportunity for intervention is much earlier—up to the age of 45—where we can make a difference,” declared Dr. Jones. For example, smoking cessation in the early stages of COPD can prevent decline in lung function; done late, “smoking cessation has very little to offer in terms of lung function decline,” he told delegates. Physical activity

also determines prognosis over time, as exercise and nutritional support that increase muscle bulk improve prognosis.

Diagnosing patients at a stage when physicians can make a difference is not easy, as noted by conference chair Dr. Alan Kaplan, family physician, Bedford Park Medical Centre, Richmond Hill, Ontario. He remarked that patients with COPD are in denial. They are not interested in hearing about why they should stop smoking and they may not even appreciate the extent of their lung function decline because they confine activities to only those that do not cause breathlessness.

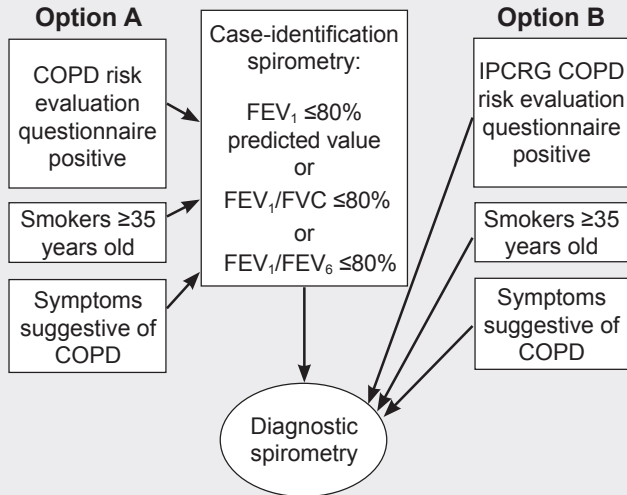
However, several effective methods do exist that can help identify the “silent” population with COPD, including the Canada Lung Health test which consists of the following five questions:

- Do you cough regularly?
- Do you cough up phlegm regularly?
- Do even simple chores make you short of breath?
- Do you wheeze when you exert yourself, or at night?
- Do you get frequent colds that persist longer than those of other people you know?

“If the patient is a smoker or ex-smoker and over 40 years old and answers yes to any of the five questions, referral should be made for further assessment including spirometry,” IPCRG Opinion authors recommended. The IPCRG algorithm of COPD case identification in primary care indicates that all patients over the age of 35 be evaluated for their risk of developing COPD by a) performing “case-identification” spirometry using a variety of small “mini-spirometers” that can exclude those with normal FEV₁ or b) offering diagnostic spirometry to patients with symptoms or risk factors or a positive screening questionnaire or whose FEV₁ screening is not normal (Figure 1).

The recent pilot emPower Program is an educational program created by a global action group of international primary care physicians. Findings from a recent pilot experience reported here at the IPCRG conference found that emPower increased COPD knowledge and changed primary care physicians’ perceptions about COPD with respect to its diagnosis, screening rates and confidence in managing COPD.

Figure 1. An Approach to COPD Case-Identification in Primary Care



Adapted from The International Primary Care Respiratory Group (IPCRG) (Kaplan et al. November 17, 2009. Opinion Piece V: "Early diagnosis of COPD does help!").

"As family physicians, we can and should look after these patients as we do patients with asthma, but first we have to diagnose them," Dr. Kaplan emphasized.

Optimizing Treatments

Identifying patients with COPD under the age of 50 is also vital in order to maximize treatment effects on lung function. In UPLIFT, the anticholinergic bronchodilator tiotropium did not alter the annual rate of decline in pre-bronchodilator and post-bronchodilator FEV₁ and forced vital capacity (FVC), the primary end points of the trial. It did, however, result in persistent improvement in lung function such that mean pre-bronchodilator FEV₁ at the end of the 4-year trial was no lower than at baseline.

In contrast, noted UPLIFT co-investigator Dr. Steven Kesten, an analysis of 356 UPLIFT patients under the age of 50 did show a reduction in the rate of lung function decline over four years among patients receiving tiotropium, even though FEV₁ levels were similar to FEV₁ levels in the entire cohort (Tashkin et al. *NEJM* 2008;359(15):1543-54). In UPLIFT, all respiratory medications other than inhaled anticholinergics were allowed.

At four years, the mean decline in pre-bronchodilator FEV₁ was 34 mL/year for tiotropium vs. 41 mL/year for controls (ns). Mean declines in post-bronchodilator FEV₁ were 38 mL/year for tiotropium patients vs. 58 mL/year for controls (*P*<0.05). At year 4, the mean difference in pre-bronchodilator FEV₁ between the tiotropium and control arms was 125 mL in favour of

tiotropium, while the mean difference in post-bronchodilator FEV₁ was 105 mL. Mean differences in pre- and post-bronchodilator FVCs between tiotropium and controls at the same time point were 155 mL and 82 mL, respectively. Patients also had a 27% lower risk of exacerbations than their counterparts not receiving the anticholinergic and improvements in health-related quality-of-life scores were seen across all four years, although they did not reach statistical significance between the two groups at year 4.

Dr. Kesten concluded, "Long-term treatment with tiotropium was associated with sustained improvement in lung function and exacerbations and may impact the rate of decline in lung function in younger patients with COPD."

Presence of Comorbidities

Further complicating the already complex management of COPD is the frequent presence of comorbidities. "The first real comorbidity that is not mentioned in many studies is asthma," noted Dr. Thys van der Molen, Professor of Primary Care, University Medical Centre Groningen, The Netherlands. Research indicates that patients with asthma have a 12-fold higher risk of developing COPD and that approximately 40% of COPD patients have asthma. To date, COPD guidelines have yet to reconcile the need to address asthma in COPD in their treatment recommendations, as Dr. van der Molen observed.

Cardiovascular disease (CVD) is another important comorbidity in COPD patients. In one study carried out in Ukraine, for example, almost 75% of a cohort of 975 COPD patients had at least two modifiable risk factors for CVD and one-third had three risk factors.

Depression and anxiety frequently occur in COPD patients as well, with anxiety far outweighing depression in terms of prevalence and impact on quality of life. As speakers here at the IPCRG explained, when a person cannot breathe, they become anxious. People may also exaggerate their response to breathlessness and then panic, which makes breathlessness worse.

Patients with COPD also have double the usual risk of osteoporosis even if they are corticosteroid-naïve; once exposed to oral corticosteroids, fracture risk increases at higher levels of bone mineral density than non-COPD patients.

Approximately one-fifth of COPD patients will also have diabetes, Dr. van der Molen noted. He concluded, "In the primary care setting, patient management should not be limited to assessing pulmonary function and health status, and increased vigilance is needed to ensure comorbidities are recognized and, where possible, appropriately managed."

Summary

Diagnosing COPD earlier may allow earlier intervention to help preserve lung function and improve quality of life for patients. □

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