Exclusion spirometry: An initiative to increase lung function assessment in primary care

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Ongoing spirometry quality standards are difficult to bring into the daily routine of general practice. As a result, spirometry is rarely performed by primary care physicians. A new approach is proposed: exclusion spirometry. Acceptable and reproducible results are sought. However, the goal of the test is to try to reach values within normal limits, even if results do not reach quality standards. Normal results would be sufficient to exclude respiratory impairment, except in asthma. Abnormal results would require further testing in a diagnostic spirometry laboratory. The aim of the initiative is to enhance the compliance of general practitioners in using spirometers for screening.

Key Words: *Primary care; Screening; Spirometry*

Undiagnosed airflow obstruction is more common than doctor-diagnosed chronic obstructive pulmonary disease (COPD) (1). If asymptomatic COPD is detected, physicians have the opportunity to help patients escape its consequences by encouraging them to quit smoking (2), the benefits of which may extend to their nonsmoking relatives exposed to tobacco smoke (3).

A number of difficulties have been identified in the application of spirometry in clinical practice. In a recent mail survey of Canadian family physicians, 34.3% of respondents indicated they were not at all comfortable with performing spirometry tests, and approximately 60% answered that they would not use spirometry to screen patients at high risk for COPD (4). These results confirmed those of a previous Canadian study demonstrating that primary care practitioners markedly underused spirometry as a screening tool (5). Similarly, a British study reported that approximately one-half of general practitioners thought that spirometry should be available in the practice, but approximately one-half of them actually possessed a spirometer; among those, approximately one-half did not use it (6). There are reports that suggest that the quality of spirometry tests in primary care is low (7,8), despite the use of spirometer quality assurance features and interventions such as spirometry workshops (7). In this regard, the practicality of a screening program in the primary care setting has been questioned (9).

An American initiative known as the National Lung Health Education Program aims to encourage identification of

La spirométrie d'exclusion : Une initiative pour accroître l'exploration fonctionnelle respiratoire en première ligne

Il est difficile d'obtenir des normes constantes de qualité de la spirométrie dans le quotidien de la pratique générale. Par conséquent, les médecins de première ligne effectuent rarement des spirométries. Une nouvelle démarche est proposée : la spirométrie d'exclusion. On cherche à obtenir des résultats acceptables et reproductibles. Cependant, l'examen vise à tenter d'obtenir des résultats dans les limites normales, même si ces résultats n'atteignent pas des normes de qualité. Des résultats normaux suffiraient pour exclure une atteinte respiratoire, sauf en cas d'asthme. Des résultats anormaux exigeraient des examens supplémentaires dans un laboratoire de spirométrie diagnostique. L'initiative vise à aider les omnipraticiens à mieux respecter les normes d'utilisation du spiromètre pour le dépistage.

COPD in its early stages by primary care physicians (10). Development, validation and implementation of a new type of spirometry – office spirometry – has been recommended (11). Changes introduced by 'office spirometry' mainly affect office spirometer specifications. However, quality standards for 'office spirometry' are essentially the same as those for diagnostic (laboratory) spirometry. It seems logical that these high quality standards are at the core of the problems affecting spirometry in primary care: reluctance to use it and poor quality test results. We believe that the design of a new type of spirometer would have little impact on these problems. In fact, spirometers with inbuilt quality assurance prompts were used in a primary care study with the expectation that they would improve the quality of spirometry, but this did not appear to be the case (7). It seems that an approach involving the physician should be attempted.

THE INITIATIVE

The statement of the American Thoracic Society on standardization of spirometry (12) mentions:

"It cannot be overemphasized that failure to meet these criteria does not necessarily invalidate the maneuver, since for some subjects, this is their best performance. Furthermore, such maneuvers should be retained, since these maneuvers may contain useful information."

With this idea in mind, we propose that the aim of spirometry in primary care practice should be to exclude, from further

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respiratory evaluation, those patients in whom normal spirometry values can be demonstrated, and not to diagnose respiratory impairment nor to monitor changes in pulmonary function. This could be done even when tests are not the best that the patient could produce. We will call this type of procedure 'exclusion spirometry'.

However, if normality can not be demonstrated after two or three visits to the primary care office, the patient can neither be excluded from having a respiratory impairment nor diagnosed with having one. It is probably time to send him or her to a pulmonary function laboratory for diagnostic spirometry. Respiratory experts would understand that patients referred on the bases of exclusion spirometry results are only suspected of having a ventilatory impairment. Quantitative results of exclusion spirometry would not need to be sent to them, because accurate quantitative results would only be provided by diagnostic spirometry.

We think of a session of exclusion spirometry as one in which a patient performs approximately four manoeuvres of forced expiration, trying to reach an expiratory time of at least 6 s; repeatable results are sought. The highest values of forced expiratory volume in 1 s and forced vital capacity measured among all manoeuvres are chosen and used for the calculation of forced expiratory volume in 1 s/forced vital capacity. Interpretation of results is limited to two possibilities: first, 'spirometry within normal limits', when values of these three parameters are within normal limits, excluding significant respiratory impairment; or second, 'normal spirometry could not be demonstrated', when at least one parameter is under the lower limit of normal, and hence, respiratory impairment cannot be excluded. In this case, good quality diagnostic spirometry is necessary to eliminate possible false-positive test results.

This approach does not appear to be suitable for excluding asthma, in which important changes in airway obstruction may occur in a short period of time.

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We consider this to be an effort to bring minimal pulmonary function evaluations to the level of utilization of blood pressure measurements. Therefore, it would be unfair to charge patients or third-party insurers for diagnostic quality spirometry tests when exclusion spirometry is performed. The aim is to convince the general practitioner that this procedure is a useful shortcut for excluding respiratory impairment rather than a diagnostic procedure.

CONCLUSION

We have proposed to introduce a new procedure to evaluate respiratory function. Validating studies are needed. However, validation of this procedure should not be done by comparing its quality to diagnostic spirometry. Instead, studies should be designed to assess the impact of performing exclusion spirometry in clinical practice and its effectiveness in screening the population for respiratory diseases.

The obstacles to the introduction of exclusion spirometry are the level of enthusiasm of primary care givers to apply the procedure and acceptance of the procedure by respiratory experts. If it is accepted that exclusion spirometry is of reasonable accuracy and it is widely applied, then we would be taking a step toward improvement in the care of patients with respiratory diseases. Widespread use of exclusion spirometry in primary care should increase early detection of COPD and a broad spectrum of other less common disorders, including bronchiectasis, upper airways lesions and parenchyma or chest wall diseases.

Physicians and health workers who are not familiar with spirometry would be able to test and objectively evaluate ventilatory function. The more that they perform exclusion spirometry, the better the tests should be, and the selection of patients referred for diagnostic spirometry should improve.

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