

Inspiratory Dyspnoea in Asthma

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ABSTRACT

DOCTORS and patients suffering from bronchial asthma hold differing views as to which part of respiration is the more difficult during an asthmatic attack — breathing IN or breathing OUT. This paradox is highlighted and discussed.

Clinical experience soon led me to question the nature of the dyspnoea experienced by patients with asthma — I had been taught as had most of us, that it is “chiefly expiratory in character” (1). Subsequently I became convinced of its inspiratory nature and this was graphically confirmed for me on experiencing a personal attack of asthma early in 1981.

Thus I was not surprised when doubt was cast (Morris 1981) (2) on the asthmatic dogma — this being, that the main difficulty is in breathing OUT. In the light of recent research (3) (4) suggesting that expiration is normally purely passive even in severe airflow obstruction and wishing to clarify this point an Oxford Chest Physician (Morris 1981) (2), sent out questionnaires to 119 adult asthmatic patients and 30 asthmatic children (between 12 and 17 years) asking them which part of respiration they found most difficult. Of the adults 71% found breathing IN more difficult and 18% breathing OUT. 11% found both equally difficult or did not know. Of the children only 23 responded and 21 (91%) of these replied breathing IN and 2 (9%) breathing OUT.

He then sent a questionnaire to 106 post registration physicians of all grades in the Radcliffe Infirmary, Churchill and John Radcliffe Hospitals, Oxford asking them the same question and the reasons for this.

The disturbing results were that 78% of the 72 doctors replying to the questionnaire believed that breathing OUT is more difficult and 66% of these believed this, not on a history taken from patients or

their own experience of an asthmatic attack but either from their understanding of the physiology or airway obstruction, from observation of patients or because that is what they were taught or they read in text books.

Earlier this year I realised that many of my colleagues at the Military Hospital still held expiration to be the more difficult and I decided to hold a similar survey (to that in Oxford) amongst doctors in Bahrain.

METHOD

A questionnaire (Fig. 1) was sent to 200 doctors of all grades above that of intern at Salmaniya Medical Centre to see what they thought patients felt during an asthmatic attack, and their reasons for so believing.

Fig. 1. *Questionnaire sent to Doctors*

Symptoms of asthma

Would you expect the dyspnoea occurring in asthma to be :

Inspiratory

Expiratory

(please tick the appropriate square)

Is this because,

- 1 This is what you were taught
- 2 It follows from the physiology of airway obstruction
- 3 Clinical experience
- 4 Patients with asthma have told you this
- 5 You are an asthmatic

(please tick the appropriate squares)

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RESULTS

The response was disappointingly low (Fig. 2) only 36 doctors taking the trouble to reply. However, the results in this group were remarkably similar to those in the Oxford study, 29 doctors (80%) expecting that asthmatics would find expiration more difficult, and no less than 25 (69%) of these believe this for other reasons than a history taken from the patient or their own experience of an asthmatic attack. Three doctors (9%) thought breathing IN and OUT would be equally difficult and only one of these replies was based on a history taken from the patient. Two asthmatic doctors replied — one found inspiration and the other expiration more difficult !

Fig. 2. Doctors' replies to the questionnaire.

Doctor's replies, the numbers relate to the numbered questions in the questionnaire.

Numbers (%)	1	2	3	4	5
4(11%)	1	2	1	0	1
29(80%)	12	23	21	3	1
3(9%)	1	2	2	1	0

DISCUSSION

That 21 of the 29 doctors holding expiration to be the more difficult should base this on their clinical experience nears the incredible and provides 'food for thought' for the academics at our new medical school, whose task will be to educate students to maximise benefit for patients from clinical experience.

The belief that the dyspnoea in asthma is mainly expiratory has probably arisen from the fact that the bronchioles are indeed narrower in expiration than inspiration. However, the basic problem in asthma is that of getting air into a hyperinflated lung and this is where the extra work is involved. Once this has occurred the recoil pressures of the lung and chest wall will drive the air out passively as a prolonged expiration, even through narrow airways (3).

Some asthmatics eager to take in the next breath will try to force the air out of the lungs and thus report expiration to be the more difficult.

The mention of expiratory dyspnoea only appeared in the textbooks in the 1920s and has been gradually discarded since the 1970s (2).

That most careful of medical observers Sir William Osler wrote in 1882 (5) in his "The Principles and Practice of Medicine of" the most strenuous *inspiratory* efforts

The first edition of Price's "A Text book of the Practice of Medicine" in 1922 (6) refers to asthma as "expiratory dyspnoea" but this is not mentioned after 1973.

Harrison's "Principles of Internal Medicine" 6th Edition in 1970 (7) states "..... inspiration is not as difficult as expiration" and again "expiratory dyspnoea requires the use of accessory muscles to deflate the lungs". This phrase is dropped in the 7th (1974) and subsequent editions.

The current editions of both Crofton and Douglas Respiratory Diseases (8) and Davidson's Principles and Practice of Medicine (1) teach that the dyspnoea is expiratory. The former states "..... the patient has difficulty in forcing the air out of his lungs", and in the latter the dyspnoea is said to be "chiefly expiratory in nature".

Even the recent prestigious "Oxford Text Book of Medicine" (1st Edition 1983) (9) sits on the fence when it states "because of the marked hyperinflation in severe attacks, inspiratory effort is often more exhausting than expiration".

CONCLUSION

The dyspnoea occurring in asthma is chiefly inspiratory in nature. Although the challenging of accepted dogma is uncomfortable to those who preach it and confusing to those who practise it, it must be to the ultimate good of the patient.

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