An Approach to the Management of Obstructive Airways Disease

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Appropriate physiotherapy can prepare the patient with bronchitis and emphysema, and with asthma, not only for more comfortable life with these states of chronic or intermittent airways obstruction, but also for necessary surgical procedures and early convalescence.

Training in Respiratory Exercises

The patient is trained in respiratory exercises and to cough effectively. In respect of *respiratory exercises* preliminary measurement of the range of respiratory movement, with measured evidence of an increased excursion, is an incentive. For this purpose a tape measurement of respiratory excursion and an anemometer reading are complimentary. The average, unathletic, sedentary individual, at rest uses almost exclusively diaphragmatic excursion for the purpose of ventilation. Children tend to do the same. It is, therefore, necessary to train the average patient to increase costal ventilation as well as the range of diaphragmatic ventilation, and to co-ordinate these.

For convenience, in this training, the hemithoraces are halved transversely. To demonstrate movement of the caudal (basal or diaphragmatic) half of each hemithorax the patient lies on one side with the hand of that side tucked under the head or pillow and the other arm relaxed anteriorly on the bed; the knees are bent for comfort, the one of the side on which the patient is lying slightly more than the other. The physiotherapist places her hands, fore and aft, over the lower ribs of the upper side and the patient consciously and actively expands that quadrant by deep inspiration. When, with help, the patient is familiar with this exercise, bilaterally, the help of the physiotherapist is no longer necessary — the patient clasps the lower half of the lateral chest wall with the palm of the contra-lateral hand, the arm stretched across the front of the chest, and inspires deeply and actively, and exhales passively and with complete relaxation. The arm across the anterior chest wall serves further to limit excursion of the hemithorax not being selectively exercised.

Independent expansion of the upper quadrant is appreciated if the physiotherapist places the palms of both hands, one on top of the other, over the appropriate upper quadrant of the hemithorax and the patient inspires deeply and in such a way — quickly learned by practice — that the hands can be seen and felt to be pushed forwards and upwards. The patient lies quarter-turned onto the back and comfortably supported in this position by pillows. Exhalation is again largely passive — the upper ribs and sternum drop, and the shoulders droop. This is normally a passive, subconscious act, and in the circumstances of training in breathing exercises patients often make it a conscious effort to which they exhibit resistance and they tend not to exhale completely. Training in relaxation is one facet of instruction — and the other technique which may facilitate completeness of exhalation is for the patient to exhale with lips pursed, as if blowing bubbles — a trick subconsciously used by those with emphysema who, by increasing slightly, resistance to exhalation, increase ventilatory efficiency and perhaps diminish air trapping.

Exhalation is accompanied in all positions, whether or not sputum is present, by shaking or vibration. This diminishes wheeze and respiratory muscle spasm and also loosens bronchial secretions, giving the patient a feeling of increased ventilation and well-being. The patient is also taught how to do these exercises sitting.

As training progresses, visits by the physiotherapist, or attendances at a physiotherapy department, diminish in frequency and the patient assumes direct responsibility for his own tuition in normal, controlled ventilation — during periods of rest (sitting in a bus, for example), and during normal activity such as walking and climbing stairs. The untrained patient with obstructive airways disease tends to approach a flight of stairs, pause, take as deep a breath as he can, get as quickly as he can to the top and rest, panting. He is trained to climb the stairs slowly, breathing deeply, consciously and in a controlled fashion, with full exhalation. This becomes second nature and stairs cease to constitute a physical and mental hazard. Requirements are individual — some need to be taught to inhale with one step and exhale with the next; others can take as many as five stairs with inhalation and as many again with exhalation. The time spent — in the context of climbing stairs, therefore, the number of stairs — on exhalation should at least be the same, and preferably longer, than that spent on inhalation. Pursing the lips on exhalation, often already second nature, is a means of prolonging the exhalatory phase.

Trunk Exercises

Trunk exercises — rotation and side and forward flexion — and arm exercises, all undertaken with controlled respira

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TREATMENT OF PSORIASIAS (continued from page 3)

CONCLUSION

It is apparent from the results so far to hand that certain patients in all groups of treatment, responded to treatment. A total of only 13,7 per cent of patients failed to heal under treatment. 19,6 per cent of patients suffered relapses after completing a course of treatment. For some unknown reason the women averaged less total treatments than men in all groups except 3. Statistically there is a little difference in the long term effect of any treatment. This may become apparent over the next few years whilst these patients continue to be followed up.

However, it is felt that group 3 patients have done better than the rest, although this cannot as yet be proved statistically. It is noted though that all long standing cases did better in this group of treatment.

The value of this survey and the establishment of a psoriasis treatment clinic for out patients have proved extremely valuable, in that patients have now someone to report back to on the disease, and facilities exist for immediate treatment if and when required.

Patients have also been made more aware of attending to psoriasis lesions when first observed, instead of neglecting the disease. Even if physiotherapists do not completely cure this disease, but can effectively control it, a new approach to the treatment will have proved worthwhile.

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tion, serve to increase mobility and the range of respiratory excursion. The chronic bronchitic with emphysema has not only a "stiff" chest, but also a stiff back and shoulders. As mobility increases, so does the facility with which secretions are dislodged and coughed up. Violent exertion is discouraged; emphasis is on graded increase in activity without the patient becoming distressed. It is difficult to define how much improvement relates to training in the use of ventilated reserve, and how much is consequent upon increase in ventilatory reserve — that is, does training diminish airways obstruction or make unobstructed airways more efficient as ventilators. The younger, more athletic, patient is trained to increase the efficiency of back and abdominal muscles, always with consciously controlled respiration.

Training in Relaxation

Training in relaxation is one important facet in management. Any of the accepted routines for training in relaxation serve — by contrasting tension and relaxation; by that curious combination of persuasion and self-hypnosis by which a limb is apparently so heavy that it cannot be moved; or by any technique that the trained physiotherapist finds suitable. The positions in which the patient lies for relaxation — or sits — are determined by experience with the individual patient, and many have preference for a particular position as the one in which they have learnt by experience that they breathe most comfortably. The "Brompton Hospital" relaxation positions serve well for those who do not have other preference.

Posture often needs to be modified. The patient with emphysema tends to walk with the head thrust forward, shoulders raised and head stiffly, backwards, arms fixed at the sides and trunk immobile. Relaxation contributes to improvement in posture, but instruction in a more acceptable stance and walking carriage is helpful. It is the position of the head and relaxation of the neck which require most attention.

Mechanical Aids

There are mechanical aids which contribute to the success of training. *Short-wave diathermy* applied through the chest unequivocally gives the patient a sense of well-being — perhaps on the *deus ex machina* principle. It may be that the effect is to relieve broncho-spasm, not only to induce more general relaxation; and it may be that mucus is rendered less viscid. The attribute of short-wave diathermy or effecting vaso-dilation may serve a purpose when used across the lungs, or it may serve only to increase the ventilation: perfusion inequality.

Intermittent Positive Pressure Ventilation

Intermittent positive pressure ventilation as a therapeutic adjunct requires the most careful control if it is not to do harm. Air is delivered to the patient through a mouthpiece, or, if there is an upper respitatory (nasal and para-nasal sinus) component, through a face mask. Except initially, to educate the patient in the use of the apparatus, a pressure of more than 20 cm of water need rarely be used, and a lower pressure is often adequate. Once the patient is trained to relax and allow the ventilator to inhale for him, it is usual not to need to use a pressure greater than 10 cm of water. The ventilator used is of the triggered variety. The patient holds the mask against the face and, with voluntary inhalation, the ventilator delivers, under positive pressure, a volume of air easily controlled by resistance from the patient, but which serves to increase the volume of inspired air if the patient does not resist. Exhalation is initiated by the patient at whatever stage he wishes, and is never inhibited by the ventilator, so that exhalation is as slow and complete as the patient feels necessary, and can be augmented by gentle manual compression of the chest by the physiotherapist. This is not the place to discuss the advisability of a patient having his own ventilator.

There are patients who claim to derive added benefit if, in addition to air, five per cent O_2 is entrained through the positive pressure ventilator. At this low percentage of O_2 entrainment, it is doubtful if benefit is more than psychological, but reasonably certain that the patient will not be harmed. Ventilators and related apparatus discussed below, are potentially a source of transfer of infection from one patient to the next, and rules of sterility must be strictly observed.

Humidification is of unequivocal benefit. Heated humidification is the ideal. The liquid used for humidification is water. A humidifier thermostatically controlled is safe. One to which there is attached an ultrasonic nebuliser is an attractive refinement.

Nebulisation associated with humidification may serve a therapeutic function. Broncho-dilators, mucolytics and antibiotics have all been used and claimed as beneficial.

Broncho-dilators which contain adrenaline or isoprenaline are potentially so hazardous that their use is not justified without a precise indication and without close medical supervision. In some patients, alcohol seems to serve as an effective broncho-dilator; more generally, it is used as a mucolytic, and is probably the least dangerous of available drugs — say 1 cc of vodka in 5 cc of saline of distilled water. There are patients in whom alcohol induces broncho-spasm. Some patients derive psychological benefit from the knowledge that they are being offered nebulised alcohol. Antibiotics applied in nebulised form must not be used alone but only as an adjunct to parenteral chemotherapy. Any of the pharmacological adjuncts should be used only in consultation with a doctor. Distilled water or normal saline are safe, and serve adequately for nearly all purposes.

Nebulisation and humidification with intermittent positive pressure ventilation are useful in patients with obstructive airways disease who are able effectively to raise mucus from their bronchi, and who are advanced in their training. These adjuncts should not be offered to the patient who cannot raise sputum and whose respiratory excursion is severely limited, since they serve to increase bronchial infection.

Physiotherapy for Asthma

Physiotherapy for asthma is as much psychotherapy as physical. Relaxation is induced. There are two situations in medical and para-medical practice in which the personality of a practitioner greatly modifies the therapeutic benefit of treatment — that in which an anaesthetist finds himself from the moment a child enters the induction room until anaesthesia is achieved, and that in which the physiotherapist finds herself in relation to the patient with asthma. Physical therapy does not control asthma — persuasion and modicum of massage, especially to the neck, do.

Once panic is controlled, to help to raise sputum is a matter of gentle persuasion and assistance. The asthmatic can often be trained to abort an attack by a programme of relaxation therapy. The patient in *status asthmaticus* is treated by the physiotherapist, in conjunction with the attending physician, by the manoeuvres aimed at improving ventilation earlier outlined. The bronchi are cleared. The asthmatic so severely jeopardised as to require artificial ventilation is managed as is any other patient on a ventilator.

Conclusion

The treatment of chronic or intermittent acute obstructive airways disease is a training programme, similar to that of an athletic, with gradual progression, gentle persuasion, and the establishment of an attitude of mind. A sympathetic approach — a combination of control and empathy which is a real test of physiotherapeutic skill — achieves progress in the individual patient in a matter of moments.

SUMMARY

A technique of physiotherapy is outlined which has been found suitable in the management of patients with bronchitis and emphysema, and with asthma, so that daily life is more comfortable and convalescence from necessary surgical procedures less often complicated.