Communications to the Editor

Duchenne Muscular Dystrophy
Boat Phenomenon in Advanced
Adequate Tidal Volume With Row-a-Boat

To the Editor:

Here, we show a practical method to obtain an adequate tidal movement, the motion looks as if the patient were rowing a boat. To perform this movement, the belt is used to compensate for the paralysis of the upper body. Despite the lack of arm movement, this respiratory movement is utilized by patients with advanced Duchenne muscular dystrophy (DMD). Interestingly, we observed that this form of RBP mostly occurred spontaneously in patients sitting in a wheelchair; the patients themselves did not notice the occurrence of RBP. This seems a wonderful example of the cleverness of the nervous system to be able to develop such curious compensatory responses in the face of lost function of autonomic respiration.

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Adequate Tidal Volume With Row-a-Boat Phenomenon in Advanced Duchenne Muscular Dystrophy

To the Editor:

We demonstrate, in our previous report, 1 that the row-a-boat phenomenon (RBP) of spontaneous upper-body movement in patients with advanced Duchenne muscular dystrophy (DMD), which occurs when these patients are sitting upright supported by a belt around the body, is a respiratory movement to compensate for the atrophied respiratory muscles in advanced DMD. The major mechanism to generate tidal volume in RBP is an active compression of the thorax and abdomen during expiration, which is done by using the belt. While the lack of arm movement, the motion looks as if the patient were rowing a boat. Here, we show a practical method to obtain an adequate tidal volume with RBP.

We used a tightly woven cotton belt 13.5 cm (5.3 inches) in width, which was tied around a patient’s wheelchair to help maintain the patient in an upright position. The belt was positioned between the fourth/fifth and eighth/ninth ribs anterior to the axillary line of the patients. With the aim of assessing the effects of belt position on the efficacy of RBP, we compared respiration with the belt in its usual position and positioned 10 cm (3.9 inches) cephalad. Breath-to-breath ventilation and expiratory gases were measured with a respiratory monitoring system (MG-360, RM-300; Minato: Osaka, Japan) through a full face-mask. The subjects were six patients with DMD, 22 to 35 years of age, who were unable to ambulate and were dependent on mechanical ventilation 50 to 100% of the time. They started spontaneous RBP as soon as they were transferred from the bed to an upright position in a wheelchair with the ventilator temporarily stopped. During RBP with the belt in its usual position, tidal volume was 276 ± 69 mL per breath (mean ± SD) and respiratory rate was 30.3 ± 7.0 breaths/min. However, with the belt in the more cephalad position, tidal volume was significantly decreased, to 222 ± 71 mL per breath (p < 0.05), without any change in respiratory rate of 31.0 ± 7.8 breaths/min. The supplemental tidal volume exerted by an efficient RBP in these patients was approximately 20%. With the usual belt position, all the patients felt uneasy on breathing due to a lack of freedom to utilize their upper body for RBP.

Breathing is controlled separately by the autonomic and voluntary pathways, which are, at least partially, anatomically different. Discrete syndromes of selective paralysis of autonomic or voluntary respiration, with the function of one pathway being paralyzed and the other being spared, were previously described by one of the authors. 2 The RBP is a backup mechanism exerted by the voluntary pathway to compensate for the paralyzed autonomic pathway, primarily the weakened diaphragm, in advanced DMD. Interestingly, we observed that RBP mostly occurred spontaneously in patients sitting in a wheelchair; the patients themselves did not notice the occurrence of RBP. This seems a wonderful example of the cleverness of the nervous system to be able to develop such curious compensatory responses in the face of lost function of autonomic respiration.

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Predictive Parameters of Dropout During Inhaled Corticosteroid Tapering

To the Editor:

We have retrospectively analyzed data from four clinical trials whereby treatment with inhaled corticosteroids (ICS) was either tapered down or stopped during a preliminary run-in period. The purpose of the analysis was to evaluate whether parameters at initial screening might be predictive of subsequent patient dropout due to asthma exacerbation.

The doses of ICS were reduced by 50% until the beclomethasone dipropionate (BDP) equivalent dose was ≤ 400 μg/d. BDP equivalent dose of ICS was calculated on the basis of fluticasone propionate (FP) being twice as potent as budesonide or BDP, so that the equivalent FP dose was multiplied twofold. We analyzed data on FEV1, forced expiratory flow, midexpiratory phase (FEF25–75), and ICS (BDP equivalent dose).

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