Correspondence

Assessment of respiratory muscles endurance in diabetic patients

To the Editor

I have read with interest the recently published paper in the Saudi Medical Journal by Meo et al[1] entitled "Assessment of respiratory muscles endurance in diabetic patients". Although the idea behind the study is intriguing, I have the following comments on the results of the study: 1. Maximum voluntary ventilation (MVV) is considered an overall test of the respiratory muscle status, the mechanical properties of the lungs and chest, and the flow resistive of the properties of the system. The MVV is an effort dependent test and subject to wide variability. When looking at the MVV data presented in that article, one can only be surprised by the extremely over inflated values for the healthy controls (mean MVV = 272.44 L/min). This outrageously high figure of MVV means that the control group had approximately 4 liters of air per each breath during the MVV maneuver. A value that is unusually high even for an athlete. The maximum value for MVV reported in that study (689.48 liters/min) seems even beyond the physiological limits of a human being. This may definitely question the validity of the MVV instruments used for such measurements. 2. It is well established that MVV can be predicted with great accuracy from a prediction equation using forced expiratory volume in one second (FEV1). Using such an equation (MVV = FEV1 X 37.5), I calculated the mean predicted FEV1 for the controls to be 7.26 liters. This figure, however, appears unbelievably high and physiologically impossible. 3. Unpublished data from our laboratory indicates that MVV values (through direct measurement) averaged approximately 150 liters per minutes for healthy college-aged males. Furthermore, highly fit athletes were able to score approximately 180 liters per minutes. 4. Finally, a possible explanation for the unusual MVV values shown for the control group in the above-mentioned study is that the authors might have summed the inspiratory and the expiratory phases of each cycles of the MVV maneuver. If so, the actual figure for the mean MVV, which might have been 136.22 liters/min, would fall within acceptable values for MVV. However, the extreme values (689.48/2 = 344.7) may still grossly out of normal range.

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Reply from the Author

We thank the interest shown by Prof. Hazzaa M. Al-Hazzaa, in our article "Assessment of respiratory muscles endurance in diabetic patients".[1] As authors, we have to state that in the present study we measured MVV test by direct method, using a Bio Pac system MP-100. The MVV values calculated by indirect method can not be matched with the values by direct method.

In our study the mean values were high and in 3 cases the values were too high, we did not exclude these to maintain the originality of our study. We believe that these high values most probably due to ethnic variation as MVV is mostly dependent on age, sex, height, weight and ethnic variation.

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Reference

1. Meo S, Al-Drees A, Arif M, Shah F, Al-Rubean K. Assessment of respiratory muscles endurance in diabetic patients. ***Saudi Med J*** 2006; 27: 223-226.