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From the author:

Despite a different way of assessing asthma severity, RAGHURAM *et al.* [1] confirm our results [2] that active smoking relates to asthma severity. They concluded from their study conducted in Salford that asthma patients were less likely than controls to have ever smoked, but according to available data the prevalence of ever-smokers was not statistically different between asthmatics and controls (50 *versus* 53% respectively, p=0.23).

Although the relationship of asthma to exsmoking was weaker, asthmatic smokers in Salford, as in the Epidemiological Study on the Genetics and Environment of Asthma, bronchial hyperresponsiveness and atopy (EGEA) study, quitted smoking significantly more often than controls (OR (95% CI)=1.3 (1.1–1.7), p=0.008). The recruitment of asthmatics was probably based on a more restrictive definition of asthma in the EGEA study, which could explain the difference in OR between studies.

The conclusion that patients with severe asthma were least successful at quitting smoking is in accordance with the EGEA data in which we showed that the severity score was higher in current-smokers. These data and others strengthen the needs of more awareness and advice to prevent asthmatics from taking up smoking.

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Nocturnal ventilation in neuromuscular diseases

To the Editor:

The paper "Mechanisms underlying effects of nocturnal ventilation on daytime blood gases in neuromuscular diseases", by ANNANE *et al.* [1], published in the European Respiratory Journal, attempts to explain the still unclear mechanism whereby noninvasive nocturnal mechanical ventilation (NNMV) improves diurnal hypercapnia in neuromuscular patients with chronic respiratory failure.

They documented for the first time an increase in ventilatory CO_2 response after prolonged NNMV induced normocapnia. The authors conclude that the improvement of daytime hypoventilation with NNMV, may represent an adaptation of the central chemoreceptors to the reduction of profound hypercapnia during sleep or reflect changes in the quality of sleep.

The first mechanism, however, cannot explain CO_2 normalization after NNMV in central alveolar hypoventilation where respiratory drive may not be restored [2]. On the other side a normal mean CO_2 tension in arterial blood (P_{a,CO_2}) was obtained at the first year when the mean CO_2 ventilatory response had increased 84% but only from 1.33–2.45 $L \cdot min^{-1} \cdot kPa^{-1}$, a range which may be observed in many hypercapnic patients. However, considering individual data shown (fig. 1 of the original article) at 1 yr, though P_{a,CO_2} was decreased in every patient [1], ventilatory drive was virtually unchanged in several for whom another explanation must be sought. At any rate, it may be difficult to decide if an increased drive is the cause or the result of NNMV induced normocapnia, since concomitant HCO_3 decrease enhances central drive [3].

Accepting that normal minute ventilation ($\dot{V}_E$)/P_{a,CO_2} is not <6 $L \cdot min^{-1} \cdot kPa^{-1}$ only three patients fell into that category, that is a substantial number of patients who normalized their P_{a,CO_2} remained however with depressed $\dot{V}_E/P_{a,CO_2}$ response. In two patients [1], P_{a,CO_2} increased at the third year (P_{a,CO_2} >6.6 kPa, fig. 1b of the original article). It would be interesting to know their $\dot{V}_E/P_{a,CO_2}$ slope evolution. Also at least two patients increased their $\dot{V}_E$ slope >1 yr after beginning NNMV, it seems difficult to believe that resetting may take so long. In our experience, in patients without airway obstruction when nocturnal ventilation is adequate P_{a,CO_2} is normalized in a few days despite the fact that P_{a,CO_2}/mouth occlusion pressure ($P_{0.1}$) may remain indefinitely abnormal.

Figure 2 in the paper by ANNANE *et al.* [1] is difficult to understand. Considering the data shown the authors conclude that the reduction of diurnal P_{a,CO_2} correlated with the increase of slope. Is each point in this figure representative of the best result during the study irrespective of time? Were the maximum values in the x and y axis, time related? So if 9/14 patients had a reduction in P_{a,CO_2} <1 kPa and 7/14 patients had a maximal reduction in the slope <1 $L \cdot min^{-1} \cdot kPa^{-1}$. If all patients had responded, no correlation could be found. Data correlation on the other side, does not necessarily imply cause-effect relationship.

In accordance with these considerations, the relationship between the ventilatory response to carbon dioxide and development of chronic hypercapnia remains unclear to us. We believe that the washout of the carbon dioxide stores [4] during nocturnal ventilation could explain the normalization of diurnal hypercapnia [5, 6].

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From the authors:

We think that the readers of the *European Respiratory Journal* should remember the following information from our paper [1]. Firstly, nocturnal intermittent positive pressure ventilation (NIPPV) improves chronic hypoventilation in neuromuscular disorders. This improvement continues in the long term. Secondly, the mechanisms on which the relief of chronic hypoventilation rely are complex. However, our data demonstrated that these mechanisms do not include change in muscle fatigue or lung mechanics. Thirdly, NIPPV reversed sleep disruption and increased respiratory drive. These changes closely paralleled the decrease in day-time arterial CO_2 tension. As shown in fig. 2 in our original paper [1], there was a good relationship between the decrease in arterial CO_2 tension and the increase in the slope of the rebreathing test. Moreover, as soon as 6 months after implementation of NIPPV, both arterial CO_2 tension and respiratory drive were improved in almost all patients. At 1 yr, in two patients (*i.e.* patients 4 and 14) the slope of the CO_2 rebreathing test remained unchanged. Patient 4 remained hypercapnic overtime (*i.e.* arterial CO_2 tension above 6 kPa). In patient 14 central respiratory drive improved after 1 yr (from 0.91 to 6.95 $L \cdot min^{-1} \cdot kPa^{-1}$) and arterial CO_2 tension was normalized (from 6.57 to 5.9 kPa). The decrease in arterial CO_2 tension was associated with a decrease in HCO_3. Given that the cellular mechanisms that allow respiratory responses to CO_2 are still unclear [2], it is difficult to draw conclusions on which of the changes in central drive, arterial CO_2 tension or HCO_3 precede the others. The increased ventilation produced by inhaled CO_2 varies considerably in conscious humans [2], and in our laboratory, the lower normal value is 3.75 $L \cdot min^{-1} \cdot kPa^{-1}$. Then, almost all patients reached this cut-off value by the third year after NIPPV initiation.

In conclusion, in neuromuscular and chest wall disorders like those evaluated in this study, nocturnal intermittent positive pressure ventilation related relief of chronic hypoventilation does not rely on change in muscle strength or lung mechanics, and is likely to be associated with changes in control of breathing. The mechanisms of improved central respiratory drive need further investigation.

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Low asthma prevalence in Turkish children

To the Editor:

We read the article "Lower prevalence of asthma and atopy in Turkish children living in Germany" by KABESCH *et al*. [1] with great interest. Asthma prevalence appears to be affected by genetic background as well as atopy, and enviromental factors. The recently published International Study of Asthma and Allergies in Childhood (ISAAC) report documents lower prevalences in Eastern Europe, Greece and Russia (<5%) than in western countries, and Turkey is also among these low prevalence countries regarding figures reported in epidemiological studies. A nationwide epidemiological study including an ISAAC-based questionnaire was conducted among 46,812 children aged 0–17 yrs residing in 27 provinces in Turkey in 1996, and the lifetime and current (within last 12 months) prevalences of asthma were 14.7 and 2.8% respectively [3]. Personal and familial atopy were the most prominent risk factors for occurrence of asthma in children. The current prevalences of asthma and wheezing were higher among children residing in coastal areas than in those living inland. The prevalences among adult Turkish immigrants reported from Sweden and Belgium are similar to the mean figures for Europe [4, 5].

Germany simultaneously received workers not only from Turkey but also from many eastern countries during the 1960s. The workers were only accepted after a detailed medical examination (chest radiography, total blood count, urine analysis, physical examination, *etc.*) and were mostly from a low socioeconomic class. However, this selection of healthy workers was later *de facto* omitted, and Germany received many political refugees after 1980. At present, the Turkish minority makes up 2% of the population of Germany. Although some of the Turks living in this country have German citizenship, most of them continue to have an active relationship with their relatives in Turkey and frequently visit their homeland. They have usually preserved their living and dietary habits despite this long residency period abroad. The breastfeeding rates are close to 90%. The children spend most of their first years at home with their parents, and those born in Turkey receive bacille Calmette-Guérin vaccination routinely. Although the number of people within the same house is declining, it is higher than the European average. There is no detailed documentation regarding the ventilation and heating characteristics of their houses. The rate of having pets at home is presumably rising, but is lower than the figure for Europe [6].

Recent epidemiological studies have revealed significant differences in dietary habits between children in the preschool and school age groups. The consumption of poultry, fish, fresh fruit and vegetables increases with age. There are also differences in dietary intake between people residing in different regions of Turkey. Fresh fruit and vegetables, fish and vegetable oil are less frequently consumed in Eastern Turkey, and fish is consumed most commonly in Northern Turkey [7]. Although there is no detailed information about the dietary intake of Turkish immigrants in Germany, changes in dietary intake have been reported among Turkish immigrants in Sweden [8].