LETTER

Serum 25-hydroxy vitamin D and exercise capacity in COPD

Janssens and colleagues1 have recently reported that vitamin D deficiency is very common in patients affected by chronic obstructive pulmonary disease (COPD) and that vitamin D status correlates with lung function. In the same issue of Thorax, Quint and Wedzicha2 discuss potential effects of vitamin D deficiency and supplementation in COPD with special focus on immunomodulatory function. However, they do not consider a potential impact of the hormone on muscle mass and function, and consequently on exercise capacity in these patients.3

Since exercise limitation is a very common complaint and a significant contributor to the poor quality of life in COPD,4 we studied the relationship between maximal aerobic capacity (VO2 peak) evaluated by an incremental bicycle ergometry until exhaustion, circulating levels of 25(OH) vitamin D and respiratory function (forced expiratory volume in 1 s, FEV1; carbon monoxide transfer factor in a single breath method, TLCO) in a cohort of 79 stable male COPD patients (Table 1).

Serum 25(OH)D levels below the lower limit of the normal range (50 ng/ml) were found in 50 patients (63.3%), values between 30 and 12 ng/ml in 24 (30.4%) and values below 12 ng/ml in 26 patients (32.9%). In agreement with Janssens et al1, we report a correlation between 25(OH)D levels and FEV1 (r=0.504, p<0.001), taking into account the differences in age, body weight and height. Further, 25(OH)D correlated with TLCO (r=0.496, p<0.001) and VO2 peak (r=0.247 p<0.05). A stepwise linear regression analysis, using VO2 peak as outcome measure and 25(OH)D levels, FEV1 (% of predicted), TLCO (% of predicted), age, weight, and height as possible determinants, revealed 25(OH)D, TLCO, age and body weight to be significantly and independently associated with exercise capacity (R2=0.567, SEE=0.418 l/min, p<0.001). In other words, our data indicate that low serum 25(OH)D levels are associated with poor exercise capacity in COPD while the degree of resting airflow limitation does not significantly add to the accuracy of the prediction of VO2 peak in this model.

In conclusion, we agree with Quint and Wedzicha that attention should be paid to the poor quality of life in COPD5 and supplementation in COPD patients. However, a more holistic approach claims to consider muscle health and exercise capacity as further potential targets of D hormone treatment in this multidimensional, disabling and progressive disease.

Marcello Ferrari, Kai Schenk, Christina Papadopoulou, Pietro Ferrari, Luca Dalle Carbonare, Francesco Bortoldo
Department of Medicine, University of Verona, Italy (EU)

Correspondence to Professor Marcello Ferrari, Department of Medicine, University of Verona, Policlinico GB Rossi, 37134 Verona, Italy; marcello.ferrari@azosp.vr.it

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; not externally peer reviewed.

Accepted 6 October 2010

Thorax 2010;65:1. doi:10.1136/thx.2010.152785

REFERENCES


Table 1 Demographics, parameters of pulmonary function and exercise capacity of participating male COPD patients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Participants, n</th>
<th>Age, years</th>
<th>Weight, kg</th>
<th>Height, cm</th>
<th>BMI, kg/m²</th>
<th>FEV1, l</th>
<th>FEV1, % predicted</th>
<th>VC, l</th>
<th>VC, % predicted</th>
<th>FEV1/VC</th>
<th>TLCO, ml/min/mm Hg</th>
<th>TLCO, % predicted</th>
<th>VO2 peak, % predicted</th>
<th>VO2 peak, % predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>79</td>
<td>71.6±7.8</td>
<td>73.7±15.9</td>
<td>164.6±7.9</td>
<td>27.0±4.4</td>
<td>1.2±0.6</td>
<td>49.8±19.3</td>
<td>2.5±0.8</td>
<td>80.5±19.3</td>
<td>0.5±0.1</td>
<td>14.9±6.3</td>
<td>67.1±27.7</td>
<td>1.35±0.59</td>
<td>75.4±28.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values are mean±SD.

*Correlation coefficient r: p<0.05.
Serum 25-hydroxy vitamin D and exercise capacity in COPD

Marcello Ferrari, Kai Schenk, Christina Papadopoulou, Pietro Ferrari, Luca Dalle Carbonare and Francesco Bertoldo

Thorax published online October 30, 2010

Updated information and services can be found at: http://thorax.bmj.com/content/early/2010/10/29/thx.2010.152785

These include:

References

This article cites 4 articles, 3 of which you can access for free at: http://thorax.bmj.com/content/early/2010/10/29/thx.2010.152785#BIBL

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to: http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to: http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to: http://group.bmj.com/subscribe/