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2509

Meta-analysis of the long-term effects of inhaled corticosteroids in chronic obstructive pulmonary disease (COPD)

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The role of inhaled corticosteroids (ICS) in the long-term management of COPD is still unclear. Therefore, we performed a meta-analysis of the three two-year studies published on this subject (Kerstjens et al: N Engl J Med 1992; 327: 1413–9, Derenne et al: Am J Respir Crit Care 1995; 151: A463, Renkema et al: Chest 1996; 109: 1156–62. Patients with "asthmatic features" were excluded by analyzing the original data. The effect on FEV_1 was assessed by a multiple repeated measurement technique in which time and drug effects were investigated. 95 (of the original number of 140) Patients treated with ICS (81 with 1500 μg beclomethasone, 6 with 1600 μg budesonide, and 8 with 800 μg beclomethasone) were included. 88 Patients treated with placebo were included (of the initially 144 patients). No baseline differences were observed (mean age 61 years, mean FEV_1 = 45%pred.). Worsening of the disease was the drop-out reason in 4 patients of the ICS group vs. 9 of the placebo group ($p = 0.11$). The estimated two-year difference in the prebronchodilator FEV_1 was +0.090L (95% confidence interval (c.i.) +0.010L to +0.170L) in the ICS group versus placebo, the postbronchodilator FEV_1 showed a difference of +0.083L (95% c.i. +0.003L to +0.163L). In conclusion, this meta-analysis showed beneficial long-term effects of ICS on the FEV_1 in patients with a clear diagnosis of COPD.

2510

When to perform arterial blood gases (ABG) in stable chronic obstructive pulmonary disease (COPD)?

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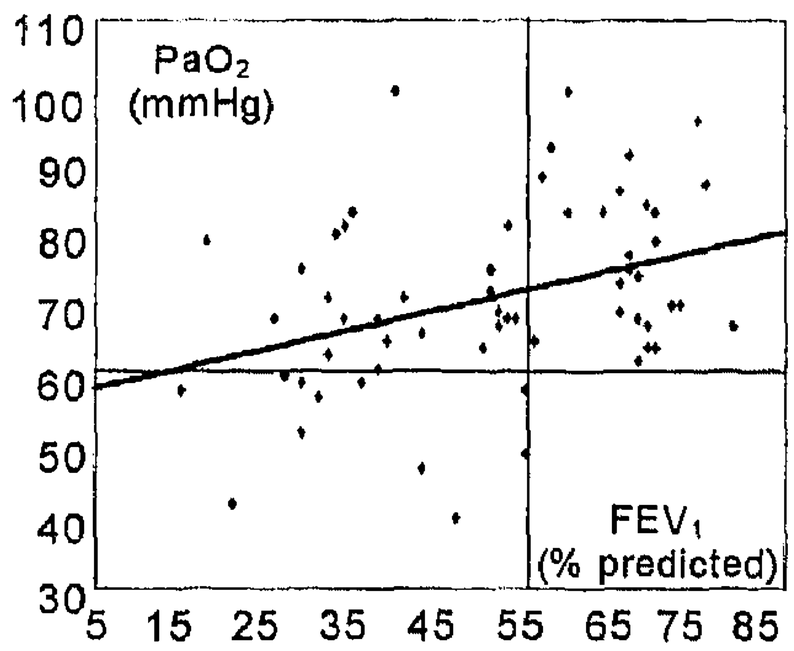
In patients with stable COPD, there is no agreement on the FEV_1 threshold above which ABG are unnecessary to identify patients who would require supplemental O_2 therapy. The American Thoracic Society and French guidelines recommend to perform ABG when FEV_1 is less than 50% predicted, whereas the European Respiratory Society recommend to perform ABG when FEV_1 is less than 70% predicted. Several studies have shown a poor correlation between spirometry and PaO_2. We studied data from 60 stable COPD patients to determine the baseline FEV_1 threshold above which patients exhibit no severe hypoxemia (as defined by PaO_2 <60 mmHg). Spirometry and ABG were performed on the same day in each patient, at least three weeks after the last exacerbation.



There was a weak but significant correlation between FEV_1 and PaO_2 ($r^2 = 0.13$, $p = 0.005$). The correlation between FEV1 and $PaCO_2$ was stronger ($r^2 = 0.25$, $p = 0.00005$). In all patients whose FEV_1 was >55% predicted, PaO2 was >60 mmHg

These data suggest that 55% would be an acceptable FEV_1 threshold above which measurement of ABG are not necessary in stable COPD patients.

2511

Survey of prescription of long term oxygen therapy outside guidelines

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Guidelines for the prescription of long term oxygen therapy (LTOT) have been published but many surveys have found a large proportion of patients prescribed LTOT to have arterial oxygen pressure above guideline thresholds. We have surveyed prescribers of LTOT to patients enrolled in the ANTADIR (French National Respiratory homecare network) Observatory. 2081 questionnaires were sent to prescribers identified by 20 regional associations asking if they ever prescribed LTOT to stable COPD patients with PaO2 $\geq$ 60 mmHg and asking them to mark any of 9 suggested situations or "other reason" for such prescription. 654 replies have been received. The mean age of doctors was 43.5 $\pm$ 7 yr. and 81% were respiratory physicians. 117/654 (17.88%) had never prescribed LTOT at PaO2 $\geq$ 60 mmHg. The remaining 537 marked a median of three options. 154 marked 5 options or more. The commonest motives for prescription outside guidelines were "nocturnal desaturation" (386), "pulmonary hypertension" (331), and "recurrent clinical right heart failure" (314). 172 (31%) doctors ticked at least these three situations together. In contrast the options of prescription "in response to demand by the patient" or "family" were only chosen 40 times. 309 prescribed for "effort desaturation", 215 for dyspnea", 139 for "repeat hospitalization", 127 for "polycythaemia". We conclude that physicians prescribe LTOT outside guidelines for objective rather than subjective reasons of perceived severity of disease and trials of efficacy of LTOT in these circumstances are required.

2512

Nocturnal oxyhemoglobin desaturation (NOD) as predictor of long-term oxygen therapy (LTOT)

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NOD often occurs among COPD patients with daytime PaO2 < 60 mmHg, and our aim was to evaluate the outcome of these subjects.

Methods: 210 COPD were observed from january 1991 to december 1995: 176 with chronic severe hypoxemia (PaO_2 50.8 $\pm$ 6.5 mmHg) treated with LTOT (LTOT subjects) and 34 with NOD, assessed by 15% of the recorded time with $SaO_2 < 90$ and diurnal PaO_2 64 $\pm$ 7 mmHg (NOD subjects).

Results: We compared age and FEV_1 of LTOT subjects and NOD subjects (Student's t test, level of significance $p < 0.05$). NOD subjects compared to LTOT subjects were younger (64 $\pm$ 3 vs 70 $\pm$ 0.4 yrs; $p < 0.005$), had FEV_1 higher (50 $\pm$ 2.7 vs 38.6 $\pm$ 2.7% predicted; $p < 0.0001$). During follow-up, daytime PaO_2 in 10/34 NOD subjects fall to values that required LTOT: these patients showed, compared to other 24 NOD subjects, FEV_1% significantly reduced (42 $\pm$ 7 versus 56.6 $\pm$ 2%, $p < 0.0001$) and greater Pack Years (58 $\pm$ 15 versus 35 $\pm$ 13, $p < 0.0001$) while age was not significantly different (61.3 $\pm$ 4.6 versus 64.6+/5.6).

Conclusions: We speculate that our 34 NOD patients are a subgroup, with an earlier stage of their disease, leading progressively to severe chronic hypoxemia: bronchial obstruction and Pack Years are the risk factors for the worsening diurnal PaO_2.

2513

Assessment of domiciliary oxygen therapy effectiveness by means of arterial blood gas analysis at home and long-term oximetry in patients with COPD

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Aim: 1. To assess if domiciliary oxygen therapy (DO) in COPD patients, is effective to reach, breathing oxygen, a resting $PaO_2 \geq 60$ mm Hg and a CT_{90} (percentage of time spent with $SpO_2 < 90\%$) while breathing oxygen <15%. 2. To assess the cause of DO failure: Malfunctioning oxygen delivery system (MODS), Insufficient prescribed oxygen dose (IOD), Patient's mistake (PM), or Mixed reasons (MR). 3. To analyse the sensitivity of long-term home oximetry in detecting patients with a resting, breathing oxygen, $PaO_2 < 60$ mm Hg.

Methods: 73 clinically stable COPD patients with chronic respiratory insufficiency, without other heart, pleural, lung or thorax notable pathologies that have been using DO for at least 1 year (55 concentrators, 8 cylinders and 10 liquid oxygen system) were consecutively recruited from ambulatory control of 5 Hospitals.

Interventions and Measurements: Arterial blood gases determined at rest, breathing oxygen at patients' home and breathing room air in the hospital. Technical check of oxygen sources using a gas analyser and a precision rotameter. Oximetry recording during the oxygen therapy time, considering two differents periods: "*day with oxygen* (DOX)" and "*sleep with oxygen* (SOX)".

Results: (1) 9 patients (12.3%) of 73 studied were excluded because they had a resting room air PaO_2, $\geq$60 mm Hg.

(2) 29 patients (45.3%) of 64 with a resting room air $PaO_2 < 60$ mm Hg, were poorly controlled with their DO: 13 (20.3%) showed a resting, breathing oxygen, $PaO_2 < 60$ mm; 16 (25%) had a $CT_{90} > 15\%$ during DOX and/or SOX.

(3) 26/73 (36%) oxygen delivery systems supply flows lower or equal to 75% of flow indicated on their caudalimeter. 54/55 concentrators deliver oxygen with concentration >90%.

(4) The causes of DO failure were: MODS 6/29, IOD 14/29, PM 2/29 and MR 7/29

(5) 12 patients of 13 with a resting breathing oxygen $PaO_2 < 60$ mm Hg had a $CT_{90} > 15\%$ during DOX and/or SOX. Sensitivity of oximetric recording = 92.3%.

Conclusions: (1) The insufficient oxygen flow by MODS, IOD, PM or MR produce unsatisfactory control of hypoxemia in 45% of COPD patients with DO studied.

(2) The long-term oximetry is an adequate method to evaluate the effectiveness of DO. It should be used systematically.

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