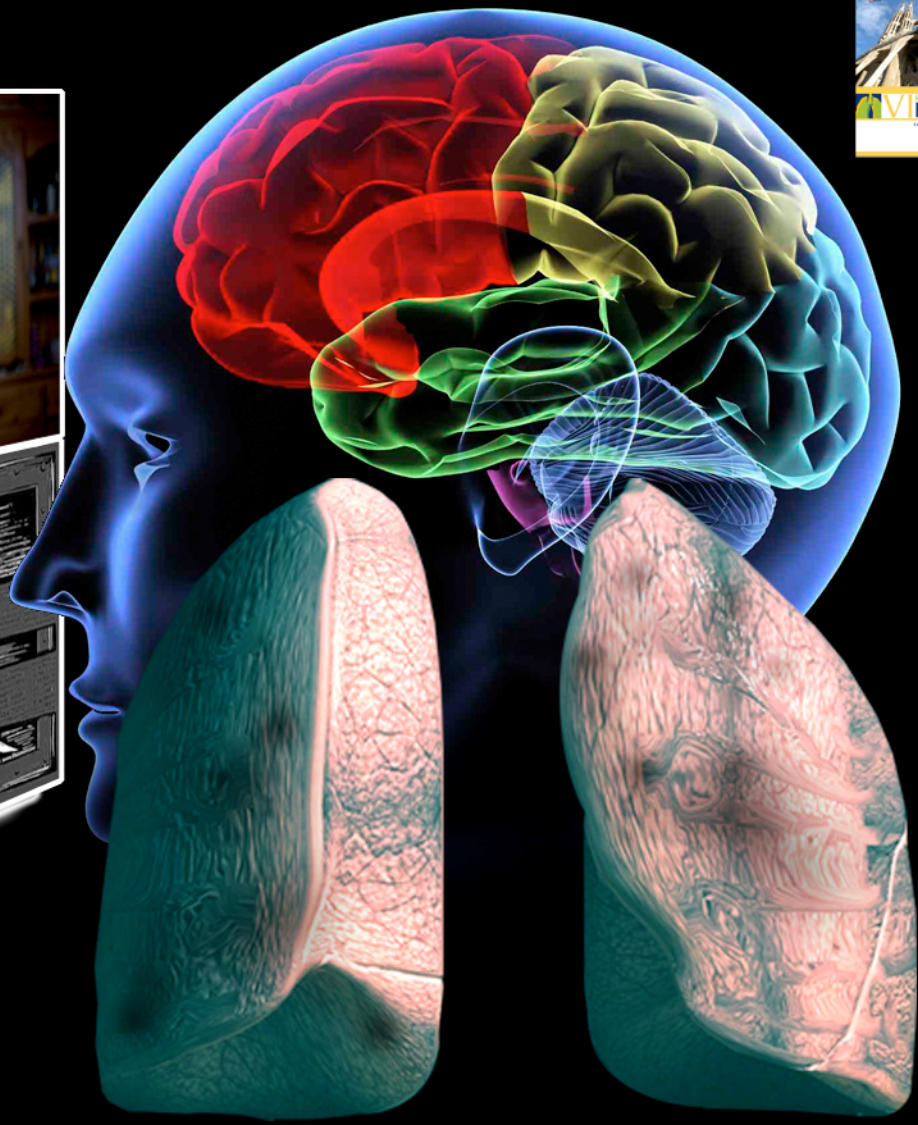

EPOC y deterioro cognitivo

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AÑO INTERNACIONAL DE LOS BOSQUES • 2011

Alzheimer 2011 Internacional

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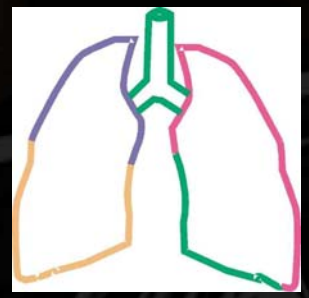
sumario

- Introducción
- Fisiopatología
- Oxigenoterapia crónica
- Posibles tratamientos
- Revisión bibliográfica
- Conclusiones



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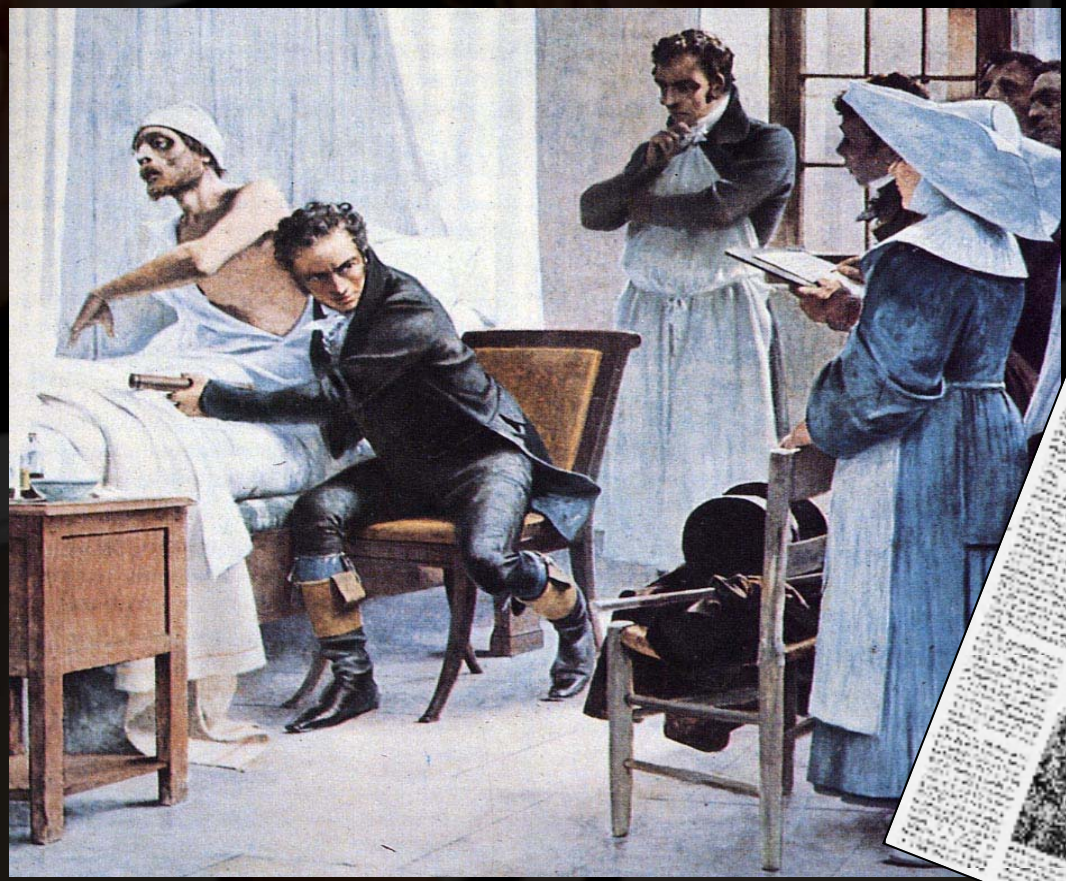

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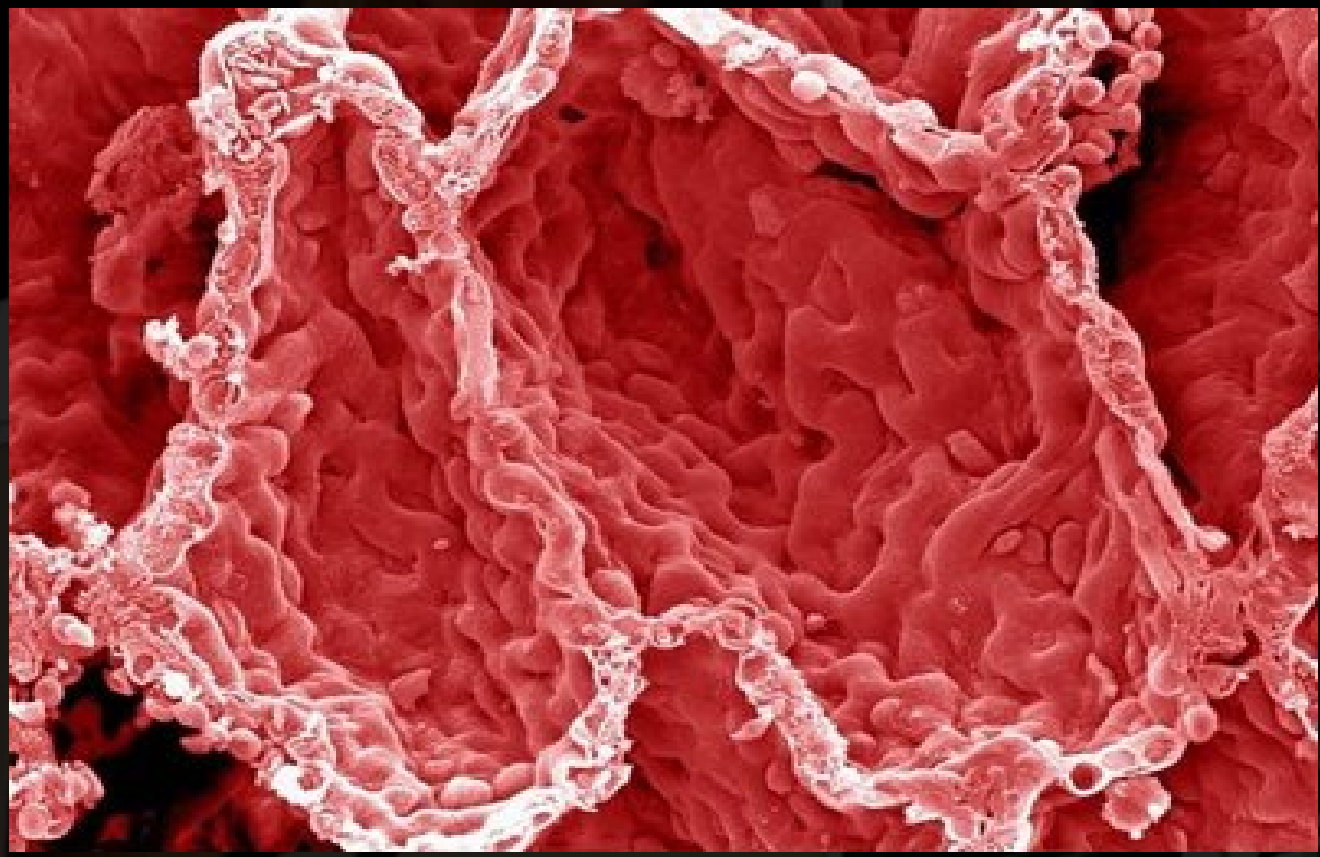

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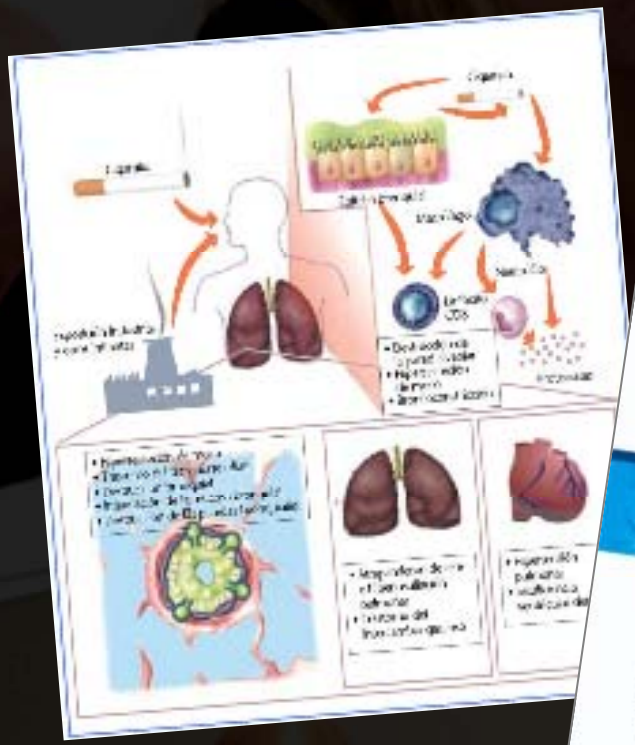

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Introducción

Enfermedad multisistémica

Comorbilidades

Fenotipos

BUSCALENOMBREALAEPOC.ORG

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Introducción

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Introducción

Deterioro Cognitivo (DC)

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Introducción

no todo es Alzheimer

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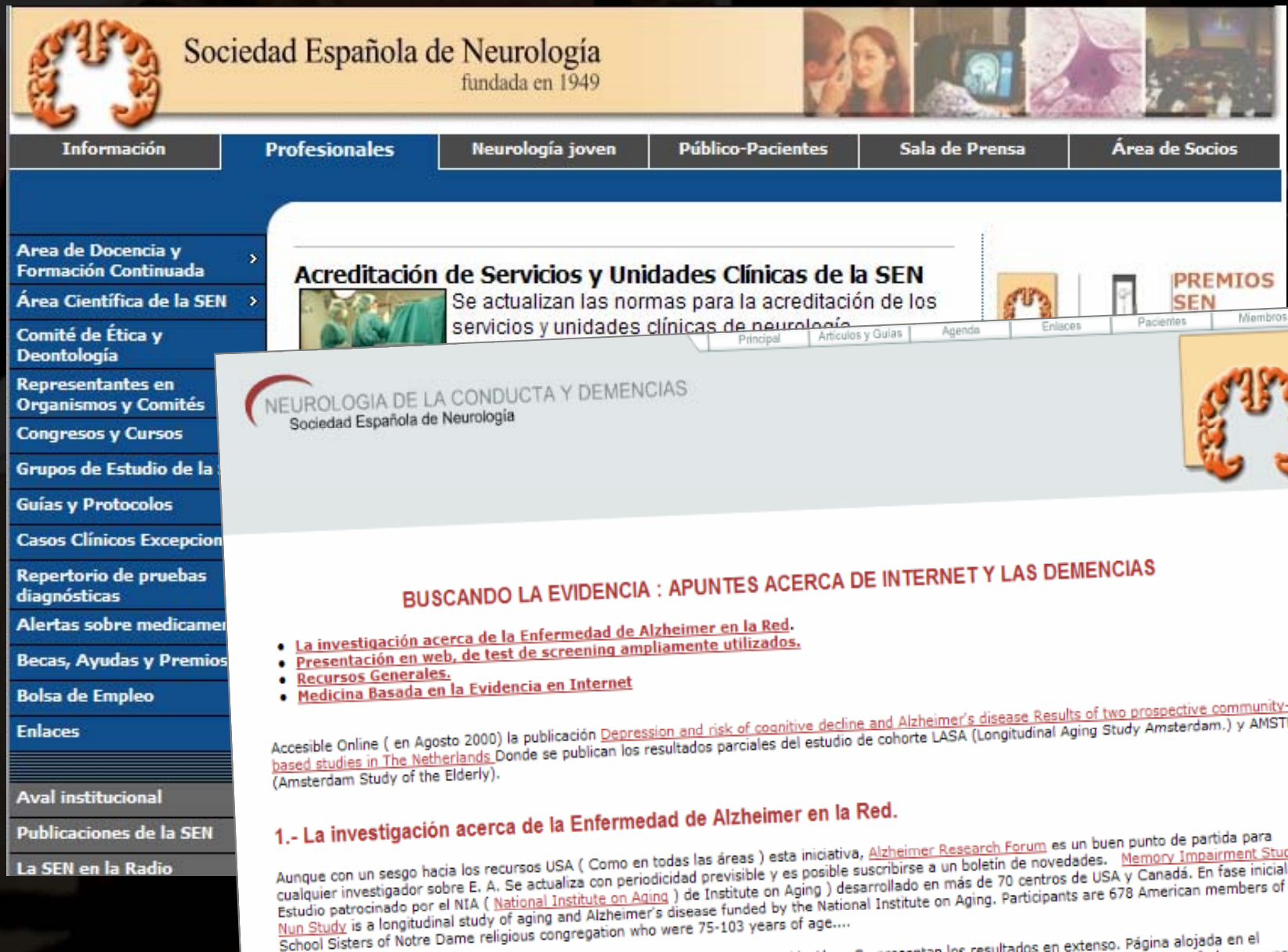
Introducción



Introducción

open access

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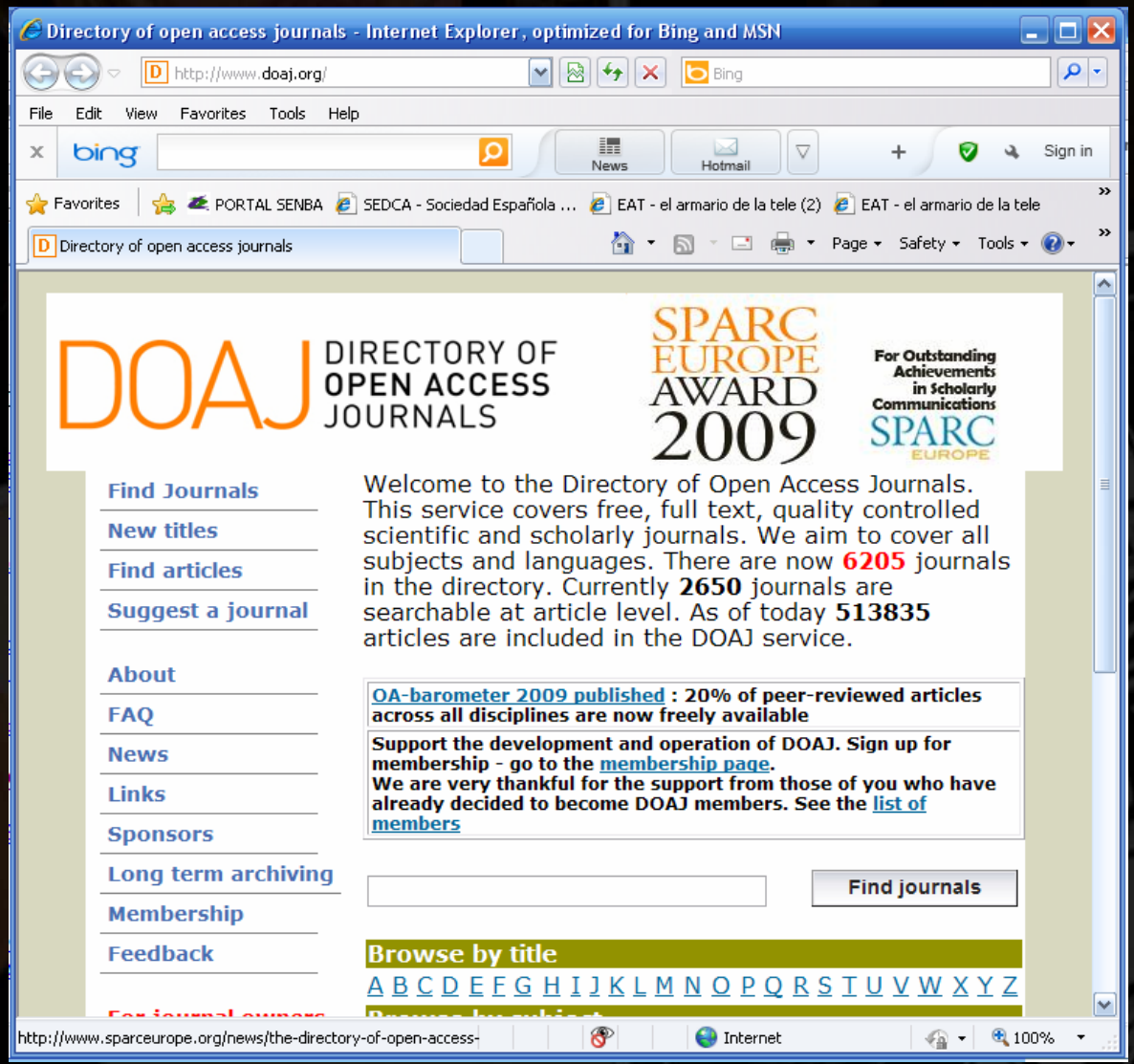
Introducción

General Medicine (426 journals)



Neurology (96 journals)

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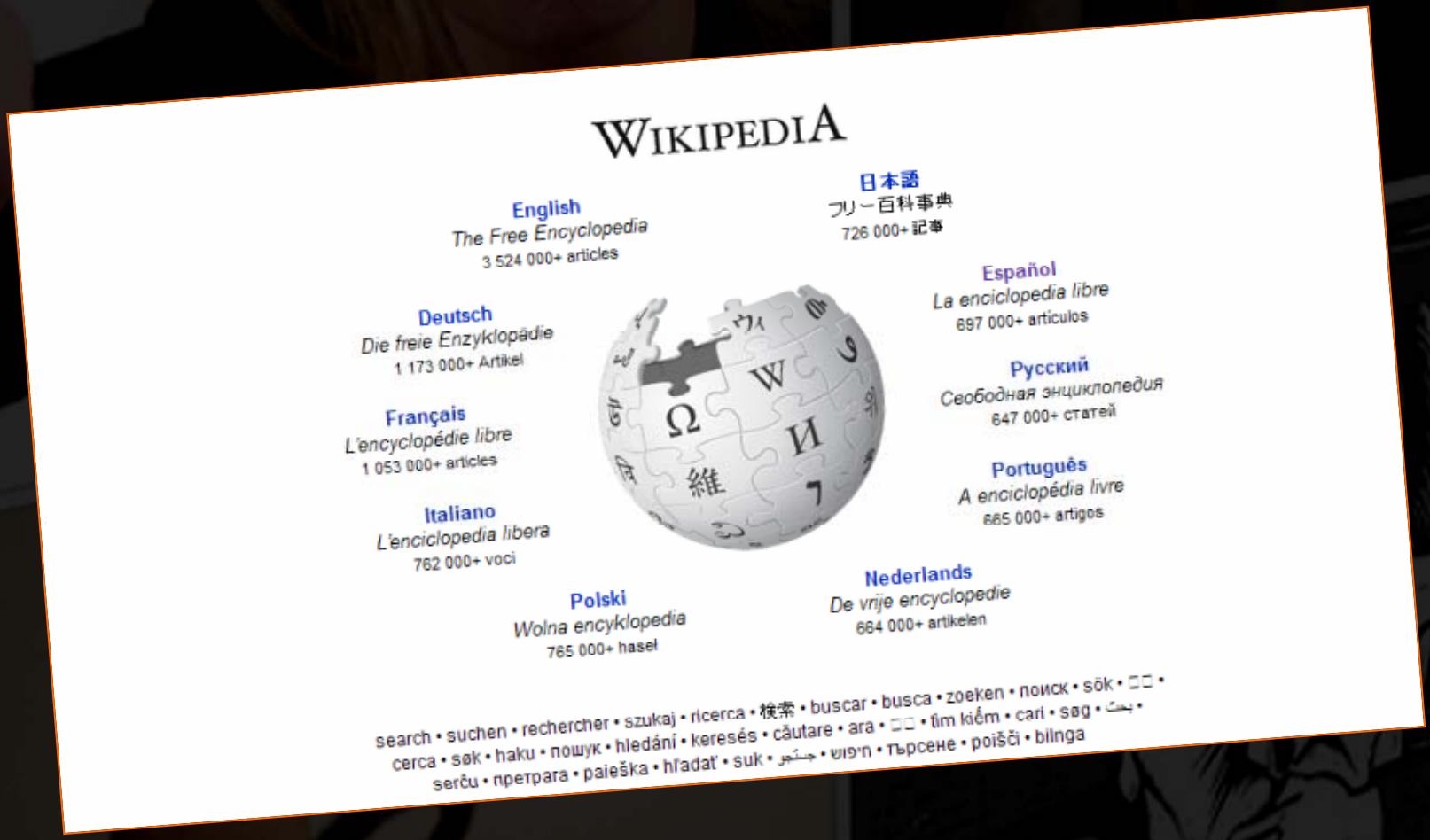

enciclopedia gratis, libre y accesible por todos

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Introducción

deterioro cognitivo definición

- Pérdida o alteración de las funciones mentales, tales como:

1. memoria
2. orientación
3. lenguaje
4. conducta
5. reconocimiento visual

que interfiere con la actividad e interacción social de la persona afectada.

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Introducción

Deterioro cognitivo

lenguaje

memoria

reconocimiento visual

orientación

conducta

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Introducción
criterios de deterioro cognitivo
clásicos

1. **Pérdida de memoria, referida por el paciente o por un informador fiable.**
2. **Facultad de memoria inferior en 1.5 SD (*desviaciones estándar*) o más por debajo de la media para su edad.**
3. **Cognición general normal.**
4. **Normalidad en las actividades de la vida diaria.**
5. **Ausencia de criterios diagnósticos de demencia.**

criterios de Petersen

Petersen RC. Free and cued selective reminding test: MOANS norms. J Clin Exp Neuropsychol. 1997 Oct;19(5):676-91.

grupo de trabajo *European Consortium on Alzheimer's Disease*

1. Quejas cognoscitivas procedentes del paciente y/o su familia.
2. El sujeto y/o el informador refieren un declive en el funcionamiento cognoscitivo en relación con las capacidades previas durante los últimos 12 meses.
3. Trastornos cognoscitivos evidenciados mediante evaluación clínica: deterioro de la memoria y/u otro dominio cognoscitivo.
4. El deterioro cognoscitivo no tiene repercusiones principales en la vida diaria, aunque el sujeto puede referir dificultades concernientes a actividades complejas del día a día.
5. Ausencia de demencia.

Subtipo de DCL: amnésico, no amnésico de múltiples dominios cognoscitivos, o no amnésico de un solo dominio cognoscitivo (distinto de la memoria).

Introducción
tests clásicos

MINI-MENTAL STATE EXAMINATION DE FOLSTEIN

Paciente ..... Edad : .....
Teléfono : ..... Fecha : ...../...../..... Dx presuntivo : .....

ORIENTACION (Máx.5. .....)
1. TIEMPO
Día
Mes
Año
Día de la semana
Hora

(Máx.5. .....)
2. ESPACIO
Piso/Dpto
Hospital
Barrio
Ciudad
País

MEMORIA (Máx.3 .....)
3. RECORDAR EL NOMBRE DE 3 OBJETOS
Repetir 6 veces la prueba si es necesario
Papel
Bicicleta
Cuchara

ATENCION Y CALCULO (Máx.5. .....)
4. CONTAR HACIA ATRÁS
de 7 en 7, a partir de 100
93....
86....
79....
72....
65....

MEMORIA DIFERIDA (Máx.3. .....)
5. RECORDAR LOS OBJETOS DEL PUNTO TRES
Papel .....
Bicicleta....
Cuchara....

LENGUAJE (Máx.2. .....)
6. DENOMINACION
Reloj
Lápiz

(Máx.1. .....)
7. REPETICION DE LA FRASE
"Ni sí, ni no, ni pero"

(Máx.3 .....)
8. COMPRENSIÓN VERBAL
Agarre este papel con la mano derecha .....
Dóblelo por la mitad .....
Póngalo en el suelo .....

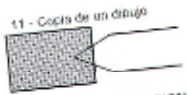
(Máx.1. .....)
9. LECTURA-COMPRENSION
"Cierre los ojos"

(Máx.1 .....)
10. ESCRITURA
Una frase con verbo, sujeto y predicado

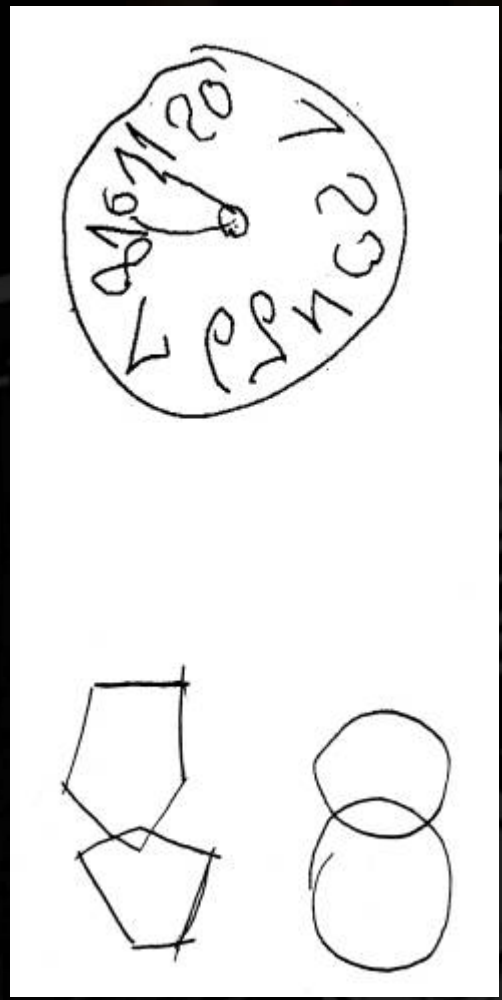
(Máx.1. .....)
DIBUJO
11. COPIA

Puntaje total: .....

11 - Copia de un dibujo



ESCALA DE EVALUACION
21 a 30 puntos = Normal
Menos de 21 puntos = Deterioro



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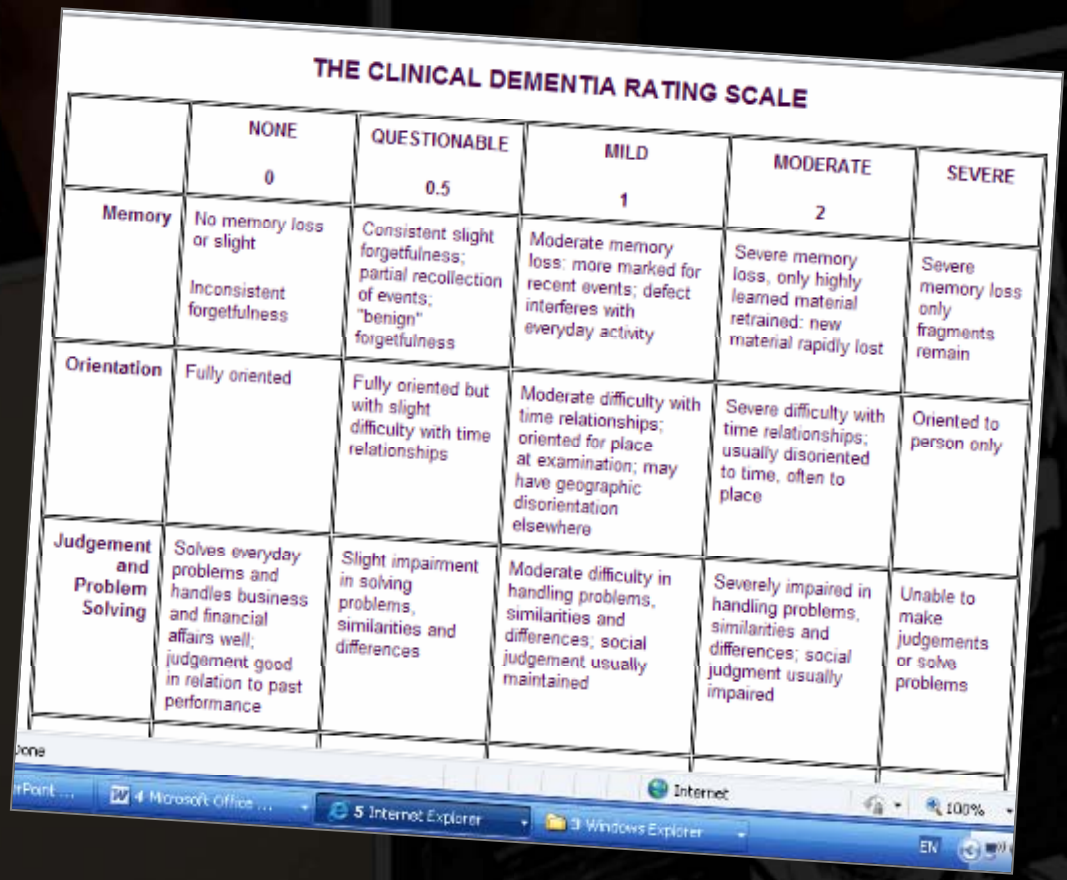
Introducción

Clinical Dementia Rating

escalas-1



THE CLINICAL DEMENTIA RATING SCALE

	NONE 0	QUESTIONABLE 0.5	MILD 1	MODERATE 2	SEVERE
Memory	No memory loss or slight inconsistent forgetfulness	Consistent slight forgetfulness; partial recollection of events; "benign" forgetfulness	Moderate memory loss: more marked for recent events; defect interferes with everyday activity	Severe memory loss, only highly learned material retrained: new material rapidly lost	Severe memory loss only fragments remain
Orientation	Fully oriented	Fully oriented but with slight difficulty with time relationships	Moderate difficulty with time relationships; oriented for place at examination; may have geographic disorientation elsewhere	Severe difficulty with time relationships; usually disoriented to time, often to place	Oriented to person only
Judgement and Problem Solving	Solves everyday problems and handles business and financial affairs well; judgement good in relation to past performance	Slight impairment in solving problems, similarities and differences	Moderate difficulty in handling problems, similarities and differences; social judgement usually maintained	Severely impaired in handling problems, similarities and differences; social judgment usually impaired	Unable to make judgements or solve problems

Morris, J.C. (1993) The Clinical Dementia Rating (CDR): current version and scoring rules. Neurology, 43, 2412-4.

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Introducción escalas-2

Global Deterioration Scale

Table 15 Global Deterioration Scale

Reisberg's scale describes how Alzheimer's disease's pattern parallels in reverse that of child development—and tells doctors and relatives what to expect next of Alzheimer's victims.

Approx. Age	Abilities Acquired	Alzheimer's Stage	Abilities Lost
12+ years	Hold a job	Borderline	Hold a job
7–12 years	Handle simple finances	Early	Handle simple finances
5–7 years	Select proper clothes	Moderate	Select proper clothes
5 years	Put on clothes	Severe	Put on clothes
4 years	Shower unaided		Shower unaided
4 years	Go to toilet unaided		Go to toilet unaided
3–4½ years	Control urine		Control urine
2–3 years	Control bowels		Control bowels
15 months	Speak five or six words	Late	Speak five or six words
1 year	Speak one word		Speak one word
1 year	Walk		Walk
6–9 months	Sit up		Sit up
2–3 months	Smile		Smile

SOURCE. Roach, M. "Reflection in a Fatal Mirror," in *Aging*. Goldstein, E C., ed. Vol. 2, Art. 83. Boca Raton, Fl.: Social Issues Resource Series, Inc., 1981

pacientes con

EPOC con hipoxemia presentan deterioro cognitivo

Grant I, Heaton RK, McSweeny AJ, et al. Neuropsychologic findings in hypoxemic chronic obstructive pulmonary disease. Arch Intern Med 1982; 142: 1470–1476.

1982

Incluso, se ha sugerido que los malos resultados en las pruebas neuropsicológicas podría ser un predictor de mortalidad y discapacidad en determinados pacientes con EPOC

1. Incalzi RA, Corsonello A, Pedone C, et al. Construct validity of activities of daily living scale: a clue to distinguish the disabling effects of COPD and congestive heart failure. Chest 2005; 127: 830–838.
2. Fix AJ, Daughton D, Kass I, et al. Cognitive functioning and survival among patients with chronic obstructive pulmonary disease. Int J Neurosci 1985; 27: 13–17.
3. Antonelli-Incalzi C, Corsonello A, Pedone C, et al. Drawing impairment predicts mortality in severe COPD. Chest 2006; 130: 1687–1694

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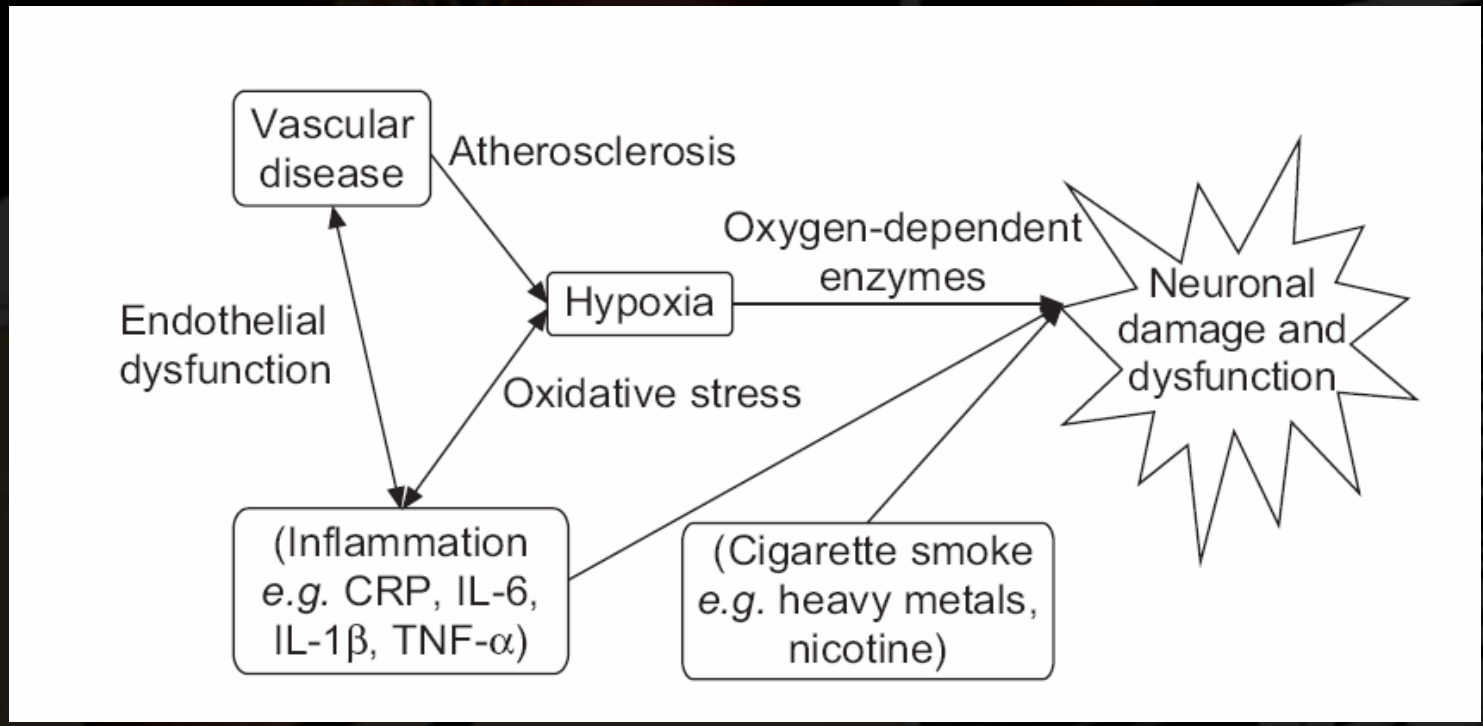
Fisiopatología

posibles mecanismos que contribuyan al daño neuronal en la EPOC



Dodd JW. Review: Cognitive function in COPD. Eur Respir J 2010; 35: 913–922.

Fisiopatología

tabaco

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Fisiopatología

hipoxia/ hipoxemia

- Los estudios sugieren mayor deterioro en las áreas de la percepción y función motora.
- Sin embargo, estos hallazgos también se encuentran en pacientes no hipoxémicos.
- Es difícil extraer conclusiones por las diferencias en la severidad de la enfermedad y la metodología empleada.

1. Grant I, Heaton RK, McSweeny AJ, et al. Neuropsychologic findings in hypoxemic chronic obstructive pulmonary disease.
Arch Intern Med 1982; 142: 1470–1476.
2. Fix AJ, Golden CJ, Daughton D, et al. Neuropsychological deficits among patients with chronic obstructive pulmonary disease. Int JNeurosci 1982; 16: 99–105.
3. Prigatano GP, Parsons O, Wright E, et al. Neuropsychological test performance in mildly hypoxemic patients with chronic obstructive pulmonary disease. J Consult Clin Psychol 1983; 51: 108–116.
4. Liesker JJ, Postma DS, Beukema RJ, et al. Cognitive performance in patients with COPD. Respir Med 2004; 98: 351–356.5.
Favalli A, Miozzo A, Cossi S, et al. Differences in neuropsychological profile between healthy and COPD older persons. Int J
Geriatr Psychiatry 2008; 23: 220–221.

Fisiopatología

marcadores de **inflamación**

- Hay evidencia de que la proteína C-reactiva puede estar asociada con el deterioro cognitivo,bien a través de un efecto neurotóxico directo o un efecto sobre la aterosclerosis cerebral.
- Otros mediadores que también se han relacionado son la IL -6, IL-1b, factor de necrosis tumoral-alfa y alfa-1 antiquimotripsina.
- Estos estudios sugieren una asociación en lugar de una relación de causalidad.

1. Duong T, Acton PJ, Johnson RA, et al. The in vitro neuronal toxicity of pentraxins associated with Alzheimer's disease brain lesions. Brain Research 1998; 813: 303–312.
2. Warnberg J, Gomez-Martinez S, Romeo J, et al. Nutrition, inflammation, and cognitive function. Ann N Y Acad Sci 2009;
1153: 164–175.
3. Borson S, Scanlan J, Friedman S, et al. Modeling the impact of COPD on the brain. Int J Copd 2008; 3: 429–434.
4. Engelhart MJ, Geerlings MI, Meijer J, et al. Inflammatory proteinsin plasma and the risk of dementia: the rotterdam study. Archives of Neurology 2004; 61: 668–72.

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Oxigenoterapia

crónica domiciliaria

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Oxigenoterapia

1983

Arch Intern Med. 1983 Oct;143(10):1941-7.

Psychologic effects of continuous and nocturnal oxygen therapy in hypoxemic chronic obstructive pulmonary disease.

Heaton RK, Grant I, McSweeny AJ, Adams KM, Petty TL.

Abstract

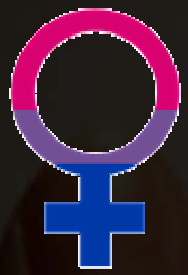
The Nocturnal Oxygen Therapy Trial (NOTT) showed previously that patients with hypoxemic chronic obstructive pulmonary disease (COPD) frequently suffered from neuropsychologic deficit and experienced disturbed mood, personality, and life quality. The present study has followed up 150 NOTT patients six months after they were randomized to continuous oxygen treatment (COT) or nocturnal oxygen treatment (NOT). Tested off oxygen, 42% showed modest neuropsychologic improvement after six months of therapy, and the rates for COT and NOT were comparable. A subsample (n = 37) was examined a third time, after 12 months of treatment. At this point patients receiving COT registered better neuropsychologic performance than those receiving NOT. Concurrently, the COT group began showing improved survival. Despite mild neuropsychologic improvement, patients reported little change in emotional status or life quality. It is concluded that prolonged oxygen treatment is associated with small but definite improvement in brain functioning among patients with hypoxemic COPD, and that COT might have some advantage over NOT in enhancing neuropsychologic functioning as well as survival.

Oxigenoterapia

2005

167 pacientes

Deterioro cognitivo mayor entre los pacientes EPOC con OCD



Deterioro cognitivo mayor entre mujeres EPOC con OCD

Tohoku J. Exp. Med., 2005, 206, 347-352

Cognitive Decline in Patients with Long-Term Domiciliary Oxygen Therapy

Takashi Ohrui,* Kazunori Tanaka,** Kaori Chiba,[3] Toshifumi Matsui, Satoru Ebihara, Mei Hu, Ichiro Tsuji,[1] Hirofumi Arai[2] and Hidehada Sasaki

Department of Geriatric and Respiratory Medicine, [1]Division of Epidemiology, Department of Public Health, [2]Department of Geriatric and Complementary Medicine, Tohoku University Graduate School of Medicine, Sendai, and [3]Teijin Home Healthcare East Japan Limited, Saitama, Japan

Ohrui, T., Tanaka, K., Chiba, K., Matsui, T., Ebihara, S., Hu, M., Tsuji, I., Arai, H. and Sasaki, H. *Cognitive Decline in Patients with Long-Term Domiciliary Oxygen Therapy*. Tohoku J. Exp. Med., 2005, 206 (4), 347-352 —— Cognitive and psycho-physiological condition in patients with long-term domiciliary oxygen therapy (DOT) remains uncertain. A cross sectional analysis was performed to investigate the age-related changes in cognitive and psycho-physiologic functions in patients with chronic respiratory failure receiving long-term DOT. Two expert practitioners visited the patient's home and examined them for analysis of cognitive function, emotional status, physical activity and degree of dyspneic sensation. One hundred and thirty-five patients completed the study. Control data from a cohort of 718 community dwellers were also included in this study. Male patients had significantly higher rates of chronic obstructive pulmonary disease (71% vs 47%, $p = 0.001$), lower values of forced expiratory volume in one second (FEV1.0) % (49.7 ± 10.3 [standard deviation, s.d.] vs 66.0 ± 7.5% predicted, $p = 0.002$) and higher Borg score, an indicator of dyspneic sensation, during daily exercise (3.2 ± 0.8 [s.d.] vs 1.4 ± 0.6, $p = 0.01$) compared with female patients. Linear regression analysis based on mean Mini-Mental State Examination scores, an indicator of cognitive function, showed that age-related cognitive decline was more pronounced in female patients than in female controls (–0.524/year, $R^2 = 0.426$ vs –0.120/year, $R^2 = 0.027$, $p < 0.0001$), while there was no significant difference between male patients and male controls (–0.156/year, $R^2 = 0.054$, vs –0.077/year, $R^2 = 0.016$, $p = 0.231$). These results demonstrate that age-related cognitive decline is more exaggerated in female patients receiving long-term DOT which should be taken into consideration in caring for patients with chronic respiratory failure. ——— chronic respiratory failure; domiciliary oxygen therapy; long-term survivor; cognitive function; Borg scale

Received October 1, 2004; revision accepted for publication May 31, 2005.
*The first two authors contributed equally to this work.
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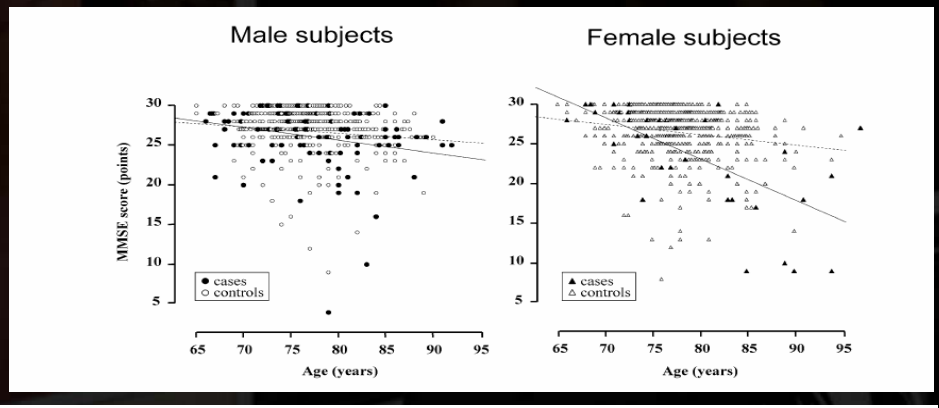
Oxigenoterapia



Variable	Controls		Patients		*p* value*
	Male (*n* = 301)	Female (*n* = 417)	Male (*n* = 101)	Female (*n* = 34)	
MMSE score	27.0 ± 3.0	26.4 ± 3.4	26.0 ± 2.4	23.4 ± 2.1	0.02
≦ 23 No. (%)	18(6)	29(7)	15(15)	14(41)	0.01
> 24 No. (%)	283(94)	388(93)	86(85)	20(59)	
GDS score	4.4 ± 2.8	4.2 ± 2.9	6.2 ± 3.4	5.9 ± 2.6	0.16
Functional/performance status (Katz index)	6.2 ± 1.8	6.2 ± 2.1	7.7 ± 3.3	7.0 ± 2.4	0.17
Borg score	1.1 ± 1.0	1.2 ± 1.1	3.2 ± 0.8	1.4 ± 0.6	0.01

Plus-minus values are means ± S.D. *Comparisons were made between male patients and female patients with long-term DOT.

MMSE and GDS denote Mini-Mental State Examination and Geriatric depression scale.

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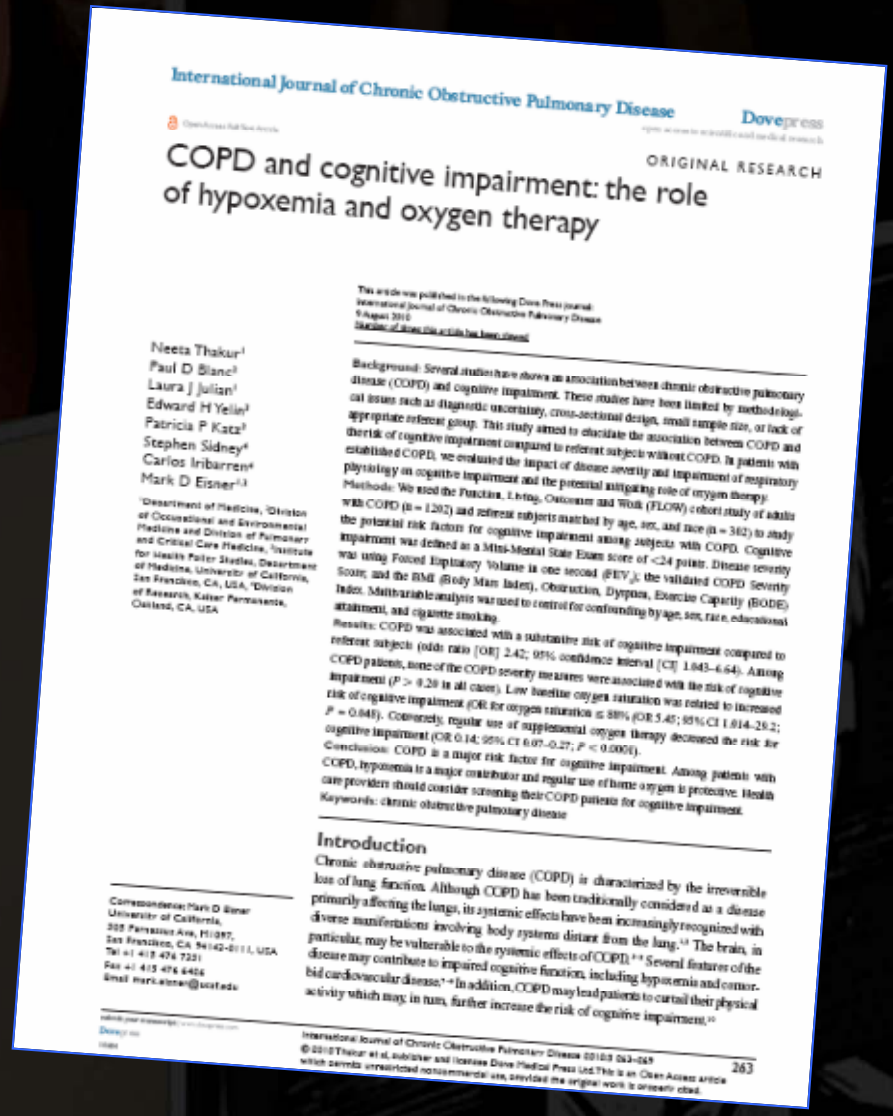
International Journal of COPD

Oxigenoterapia

estudio de cohortes
1202 pacientes con EPOC
302 sujetos sanos

la hipoxemia es el mayor contribuyente del deterioro cognitivo

el uso de OCD en pacientes con EPOC es protector



International Journal of Chronic Obstructive Pulmonary Disease — Dovepress

ORIGINAL RESEARCH

COPD and cognitive impairment: the role of hypoxemia and oxygen therapy

Neeta Thakur[1]
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Carlos Iribarren[4]
Mark D Eisner[1,3]

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International Journal of Chronic Obstructive Pulmonary Disease
5 August 2010

Background: Several studies have shown an association between chronic obstructive pulmonary disease (COPD) and cognitive impairment. These studies have been limited by methodological issues such as diagnostic uncertainty, cross-sectional design, small sample size, or lack of appropriate referent group. This study aimed to elucidate the association between COPD and the risk of cognitive impairment compared to referent subjects without COPD. In patients with established COPD, we evaluated the impact of disease severity and impairment of respiratory physiology on cognitive impairment and the potential mitigating role of oxygen therapy.

Methods: We used the Function, Living, Outcomes and Work (FLOW) cohort study of adults with COPD (n = 1202) and referent subjects matched by age, sex, and race (n = 362) to study the potential risk factors for cognitive impairment among subjects with COPD. Cognitive impairment was defined as a Mini-Mental State Exam score of <24 points. Disease severity was using Forced Expiratory Volume in one second (FEV$_1$), the validated COPD Severity Score, and the BMI (Body Mass Index), Obstruction, Dyspnea, Exercise Capacity (BODE) Index. Multivariable analysis was used to control for confounding by age, sex, race, educational attainment, and cigarette smoking.

Results: COPD was associated with a substantive risk of cognitive impairment compared to referent subjects (odds ratio [OR] 2.42; 95% confidence interval [CI] 1.043–6.64). Among COPD patients, none of the COPD severity measures were associated with the risk of cognitive impairment ($P > 0.20$ in all cases). Low baseline oxygen saturation was related to increased risk of cognitive impairment (OR for oxygen saturation ≤ 88% (OR 5.45; 95% CI 1.014–29.2; $P = 0.048$). Conversely, regular use of supplemental oxygen therapy decreased the risk for cognitive impairment (OR 0.14; 95% CI 0.07–0.27; $P < 0.0001$).

Conclusion: COPD is a major risk factor for cognitive impairment. Among patients with COPD, hypoxemia is a major contributor and regular use of home oxygen is protective. Health care providers should consider screening their COPD patients for cognitive impairment.

Keywords: chronic obstructive pulmonary disease

Introduction

Chronic obstructive pulmonary disease (COPD) is characterized by the irreversible loss of lung function. Although COPD has been traditionally considered as a disease primarily affecting the lungs, its systemic effects have been increasingly recognized with diverse manifestations involving body systems distant from the lung.[1,2] The brain, in particular, may be vulnerable to the systemic effects of COPD.[3–5] Several features of the disease may contribute to impaired cognitive function, including hypoxemia and comorbid cardiovascular disease.[6–8] In addition, COPD may lead patients to curtail their physical activity which may, in turn, further increase the risk of cognitive impairment.[10]

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Posibles tratamientos

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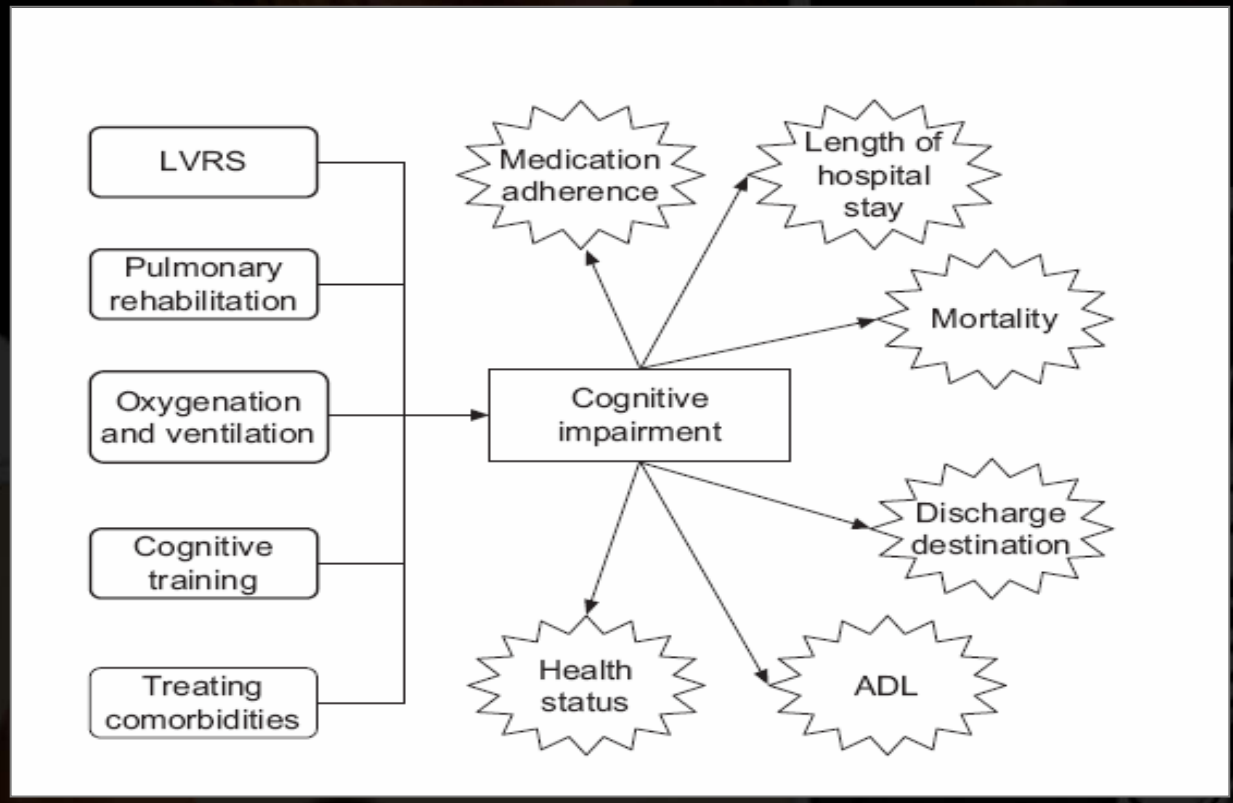
Posibles tratamientos



LVRS: lung volume reduction surgery; **ADL:** activities of daily living

Dodd JW. Review: Cognitive function in COPD. Eur Respir J 2010; 35: 913–922.

Posibles tratamientos

cirugía de reducción pulmonar

- La CRVP se ha asociado con mejoría de la función neuropsicológica, así como en depresión, la ansiedad y la calidad de vida durante más de 6 meses de seguimiento.

- Incluso después del ajuste por diferencias en la capacidad de ejercicio e hipercapnia entre la CRVP y grupos de control, mejora en la velocidad psicomotora y memoria verbal siendo significativas.

- Limitación del estudio, 19 pacientes.

Kozora E, Emery CF, Ellison MC, et al. Improved neurobehavioral functioning in emphysema patients following lung volume reduction surgery compared with medical therapy. Chest 2005; 128: 2653–2663.

Posibles tratamientos

rehabilitación pulmonar/ ejercicio

- Un reciente meta-análisis sobre actividad física en la población de mayor edad, mostró un 14% de mejoría en la actividad aeróbica coincidiendo con un mejora de la capacidad cognitiva, sobre todo en la función motora y atención auditiva, además de en la velocidad de procesamiento y visual atención.

- En los pacientes con EPOC, la evidencia es limitada, pero se objetivan mejoras en la fluidez verbal, después de 3 meses. Parece que los programas de ejercicios adecuados pueden tener efectos beneficiosos sobre las funciones cognitivas, pero no está claro si estos beneficios son a largo plazo.

1. Angevaren M, Aufdemkampe G, Verhaar HJ, et al. Physical activity and enhanced fitness to improve cognitive function in older people without known cognitive impairment. Cochrane Database Syst Rev 2008; 2: CD005381.
2. Etnier JL, Berry M. Fluid intelligence in an older COPD sample after short- or long-term exercise. Med Sci Sports Exerc 2001; 33: 1620–1628.

Posibles tratamientos

oxigenoterapia

- La terapia de oxígeno aguda ni a largo plazo ha demostrado mejorar el rendimiento neuropsicológico.
- Hay otros estudios que si bien demuestran que la OCD pueden reducir el deterioro cognitivo, no puede prevenirlo por completo.
- Parecen necesarios estudios longitudinales más largos que incluyen distintas poblaciones con EPOC.

Vos PJ, Folgering HT, van Herwaarden CL. Visual attention in patients with chronic obstructive pulmonary disease. Biol Psychol 1995; 41: 295–305.
Wilson DK, Kaplan RM, Timms RM, et al. Acute effects of oxygen treatment upon information processing in hypoxemic COPD patients. Chest 1985; 88: 239–243.
Incalzi RA, Gemma A, Marra C, et al. Chronic obstructive pulmonary disease. An original model of cognitive decline. Am Rev Respir Dis 1993; 148: 418–424.
Hjalmarsen A, Waterloo K, Dahl A, et al. Effect of long-termoxygen therapy on cognitive and neurological dysfunction in chronic obstructive pulmonary disease. Eur Neurol 1999; 42: 27–35.

Posibles tratamientos

entrenamiento cognitivo

- En pacientes con EPOC el entrenamiento cognitivo no ha demostrado su efectividad.

Rejuvenation Res. 2008 Feb;11(1):239-50.

Cognitive training is ineffective in hypoxemic COPD: a six-month randomized controlled trial.

Incalzi RA, Corsonello A, Trojano L, Pedone C, Acanfora D, Spada A, Izzo O, Rengo F.

Geriatric Medicine, University Campus Bio-Medico, Rome, Italy.

Abstract

Cognitive impairment is highly prevalent in chronic obstructive pulmonary disease (COPD) complicated by chronic hypoxemia, but the effect of cognitive training in patients with COPD has not been studied. The aim of the present study was to verify whether cognitive training can preserve cognitive abilities of patients with hypoxemic COPD. Our series consisted of 105 COPD patients with at rest (n = 36) or effort (n = 69) hypoxemia and free from concurrent dementing diseases. Neuropsychologic assessment included a screening test, the Mini Mental State Examination (MMSE), and a standardized confirmatory battery of neuropsychological tests, the Mental Deterioration Battery (MDB). After baseline assessment, patients were randomized to receive standardized multidimensional care (standardization of pharmacological therapy, health education, selection of inhalers according to patient's ability, respiratory rehabilitation, nutritional counseling, oxygen therapy, and control visits) with (n = 53) or without (n = 52) cognitive training aimed at stimulating attention, learning, and logical-deductive thinking. Cognitive performance was reassessed after 1.5, 4, and 6 months. The analysis of variance for repeated measures (ANOVA) having the group membership (study vs. control) as grouping factor was used to assess changes in cognitive performance. Both intervention and control groups showed no significant changes in cognitive performance except for a trend toward improvement in verbal fluency and verbal memory, but cognitive intervention had no significant effect. In conclusion, cognitive training seems ineffective in COPD. However, a multidimensional standardized therapeutic approach, as it was indistinctly provided to all patients, could help to slow or prevent cognitive decline.

Incalzi RA, Corsonello A, Trojano L, et al. Cognitive training is ineffective in hypoxemic COPD: a six-month randomized controlled trial. Rejuvenation Res 2008; 11: 239–250.

Posibles tratamientos

co-morbilidades

- El impacto sobre la función cognitiva de las intervenciones para el tratamiento de la diabetes, la hipertensión, la dislipidemia y las deficiencias de vitamina B12 y de folato ha sido objeto de numerosas revisiones.
-
- Ningún beneficio ha sido reportado en términos de incidencia de demencia o disminución de la función cognitiva.

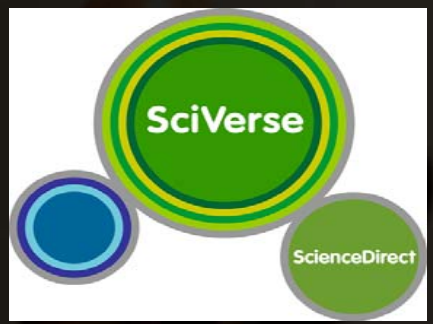
- El DC se ha asociado con pobre respuesta al tto. antidepresivo.

Potter GG, Steffens DC. Contribution of depression to cognitiveimpairment and dementia in older adults. Neurologist 2007; 13: 105–117.

Búsqueda bibliográfica

PubMed

OPEN ACCESS



DraBelénAlonsoOrtiz
Medicina Interna. Hospital Universitario de Gran Canaria Dr. Negrín
Las Palmas de Gran Canaria

Búsqueda bibliográfica

Aproximadamente 18.700 resultados (0,22 segundos)

Deterioro cognitivo

enfermedad pulmonar obstructiva crónica

DraBelénAlonsoOrtiz
Medicina Interna. Hospital Universitario de Gran Canaria Dr. Negrín
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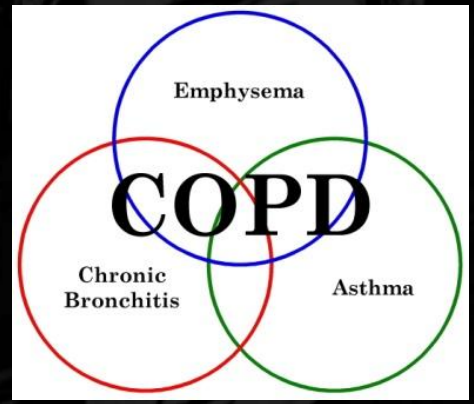
Búsqueda bibliográfica



cognitive funtions
cognitive decline
cognitive impairment



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Las Palmas de Gran Canaria

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PubMed
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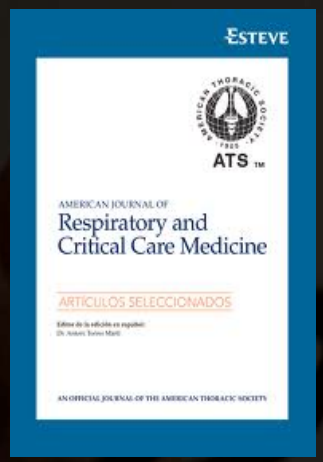
86 entradas

Búsqueda bibliográfica

1973 -2011



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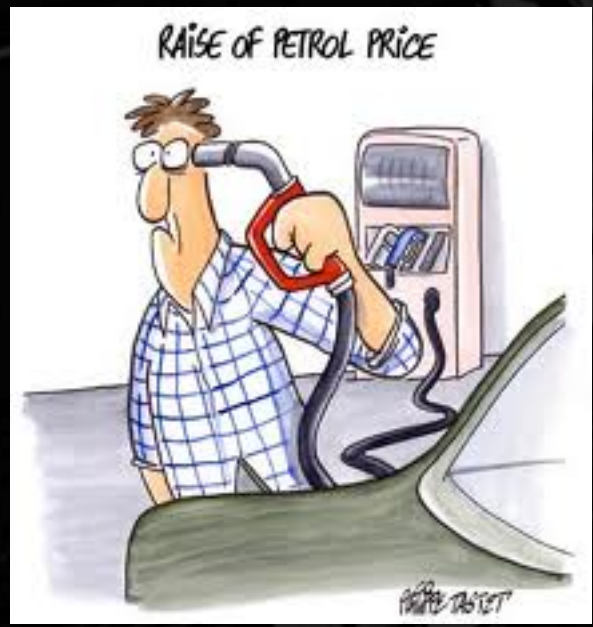
Búsqueda bibliográfica

1973

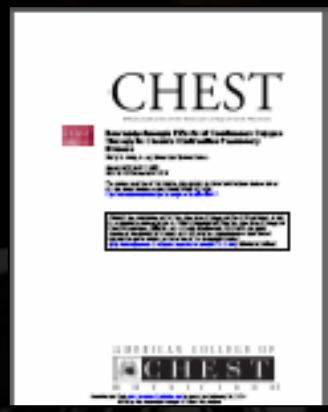
La crisis del petróleo

Caricatura sobre el impacto de la crisis del petróleo en diferentes países.



Búsqueda bibliográfica

APPROVED



Efectos neuropsicológicos beneficiosos de la OCD en los pacientes con EPOC

CHEST

Official publication of the American College of Chest Physicians

CHEST ONLINE

Neuropsychologic Effects of Continuous Oxygen Therapy in Chronic Obstructive Pulmonary Disease

Harry D. Krop, A. Jay Block and Edwin Cohen

Chest 1973;64;317-322
DOI 10.1378/chest.64.3.317

The online version of this article, along with updated information and services can be found online on the World Wide Web at:
http://chestjournal.chestpubs.org/content/64/3/317

Búsqueda bibliográfica

4 grupos

A - 42 pctes ambulatorios EPOC

B – 27 sujetos sanos

C – 21 pctes E. de Alzheimer

D – 26 sujetos mayores

el declinar de la memoria verbal es paralelo a la pérdida de función cognitiva en los pacientes EPOC

1997

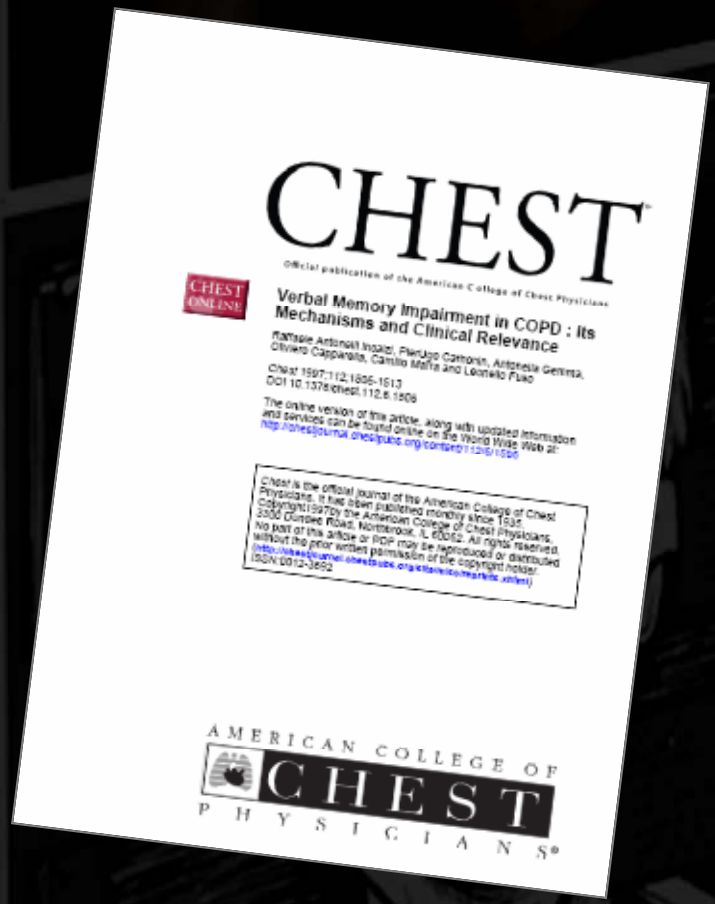


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Table 3—*Verbal Memory Indexes

	Group A	Group B	Group C	Group D	F†	p†	t‡
Immediate recall	33.6±7.3	40.5±6.8	22.2±7.7	36.3±6.6	34.07	<0.001	B>A>C
Verbal learning	40.5±16.5	47.3±16.6	25.6±19.9	44.5±13.8	9.65	<0.001	A>C
Primacy	11.6±4.6	14.4±3.8	7.4±3.7	10.9±4.5	13.6	<0.001	A>C
Secondary memory component	6.9±3.9	10.6±4.1	3.4±2.8	6.8±3.7	17.8	<0.001	B>A>C
Recency	11.5±4.3	12.9±4.2	8.7±5.2	12.1±5.5	4.04	0.01	NS
Delayed recall	6.2±2.5	8.6±2.9	2.9±1.8	7.5±1.9	30.04	<0.001	B>A>C
Intrusions	3±3.3	1.7±2.1	3±2.9	1.7±1.6	2.61	0.05	NS
True-positive recognition	11.3±2.9	12.7±2.2	9.8±3.9	12.1±2	5.31	0.002	NS
False-positive recognition	2.9±3.6	1.1±1.2	7.2±7.3	3.5±4.1	11.76	<0.001	A>C
Accuracy recognition score	89.2±9.6	95.3±4.2	79.7±10.7	91.8±7.32	17.12	<0.001	B>A>C
Verbal forgetting	39.0±27.4	28.8±23.9	69.6±25.3	32.5±17.4	16.96	<0.001	A>C
Retrieval	54.7±16.7	40.9±19.1	75.8±13.5	47.1±13.8	25.75	<0.001	B>A>C
Digit span forward	5.1±0.9	5.4±0.9	4.9±0.9	5.6±1	11.4	<0.001	A>C
Digit span reverse	3.3±0.98	3.8±0.8	3.1±0.8	3.6±0.9	10	<0.001	B>A

*Groups explained in Table 2 footnotes. Results are expressed as mean±SD.
†One-way analysis of variance; degrees of freedom of F: 3, 124.
‡Dunnett's *t* test significant at 95% having group A as the reference group. NS=not significant.

Búsqueda bibliográfica

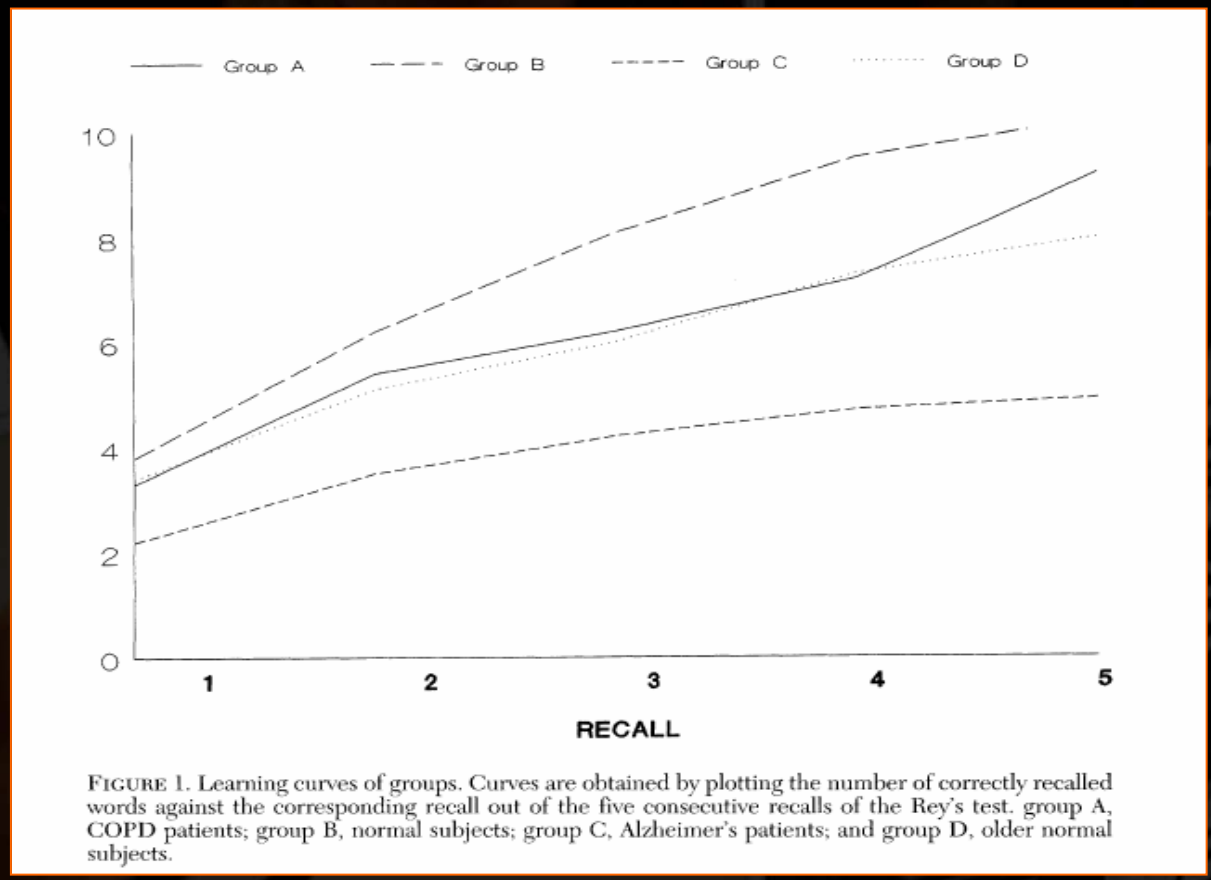


FIGURE 1. Learning curves of groups. Curves are obtained by plotting the number of correctly recalled words against the corresponding recall out of the five consecutive recalls of the Rey's test. group A, COPD patients; group B, normal subjects; group C, Alzheimer's patients; and group D, older normal subjects.

Búsqueda bibliográfica

RESPIRATORY MEDICINE (1998) 92, 525–533

Predicting cognitive decline in patients with hypoxaemic COPD

R. ANTONELLI INCALZI*, F. CHIAPPINI*, L. FUSO*, M. P. TORRICE*, A. GEMMA*
AND R. PISTELLI†

*Departments of *Geriatrics and †Respiratory Physiology of the Catholic University of the Sacred Heart, Roma, Italy*
Teaching Nursing Home, 'Cittadella della Carità', Piazzale Cittadella della Carità', Taranto, Italy

The objective was to identify predictors of cognitive decline in patients with hypoxaemic COPD on continuous oxygen therapy.

Eighty-four consecutive ambulatory hypoxaemic COPD patients in stable clinical conditions were prospectively studied over the course of 2 yr. Baseline multidimensional assessment included respiratory function tests, blood gas analysis, Mini Mental Status (MMS) test, Geriatric Depression Scale (GDS), Activities of Daily Living (ADLs) and Charlson's index of comorbidity. Reassessments were made 1 yr and 2 yr thereafter. Sequential changes in MMS, GDS and ADLs were assessed by Friedman's ANOVA by rank test.

Forty patients completed the study (group A), while 44 died or were lost to follow-up (group B). Group B was characterized by more severe respiratory function impairment and worse performances on ADLs and GDS. In group A, MMS deteriorated from baseline to the 1 yr and 2 yr reassessments (27·4 ± 2·9 vs. 25·8 ± 4·1 and 25·4 ± 4, $P<0·005$), whereas GDS and ADLs did not change significantly: the 25 patients experiencing a decline of MMS had baseline lower percentage predicted FVC (82·3 ± 17·1 vs. 86·9 ± 13·4, $P<0·03$) and FEV_1 (27·2 ± 8·6 vs. 44 ± 26·8, $P<0·02$) values and better affective status (GDS score: 11·9 ± 7·7 vs. 16·5 ± 5·6, $P<0·04$). Two-year changes in MMS and in GDS scores were inversely correlated (Spearman's $\rho = -0·32$, $P<0·04$).

Cognitive decline is faster in the presence of severe bronchial obstruction and parallels the worsening of the affective status in COPD patients on oxygen therapy. The onset of depression rather than baseline depressive symptoms seems to be a risk factor for cognitive decline.

RESPIR. MED. (1998) 92, 525–533

Introduction

A strong relationship is known to link COPD and cognitive dysfunction. Impairment of several neuropsychological functions characterizes hypoxaemic COPD and is partially reversible with the oxygen therapy (1–3). Both definitive retrieval and inaccurate recognition affect verbal memory of COPD patients (4). Furthermore, a cross-sectional study showed that peak expiratory flow rate was positively associated with performance on three screening cognitive tests in 3812 old men residing in East Boston (5). A recent longitudinal study correlating midlife pulmonary function with late-life cognitive function demonstrated that depressed FEV_1 was an independent predictor of cognitive dysfunction diagnosed by a screening instrument 25 yr after respiratory function tests had been performed (6).

No information is available regarding the rate of decline of cognitive function in COPD. The indirect evidence from case series studies is consistent with a strong relationship existing between length of history of COPD and neuropsychological impairment (3). Arterial hypocapnia characterizes patients with severe cognitive dysfunction (7). However, comorbid diseases, limitations in social activities and depression, which are very common in COPD patients, can *per se* affect cognition (2). Attempts should be made to disentangle the effects of these conditions on mental status and to identify predictors, if any, of cognitive decline.

The present study aims (1) to assess comparatively over the course of 2 yr changes in cognitive, affective and functional status of hypoxaemic COPD patients without clinically significant cognitive impairment at baseline and (2) to characterize subjects at risk of cognitive decline.

Received 10 February 1997 and accepted in revised form 4 July 1997.
Correspondence should be addressed to: L. Fuso, Department of Respiratory Physiology, Catholic University, Largo A. Gemelli 8, 00168 Roma, Italy

0954-6111/98/030525+09 $12.00/0

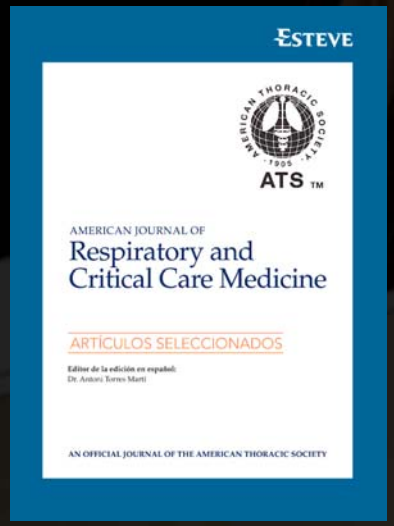
respiratory MEDICINE

El DC es más rápido en presencia de obstrucción bronquial severa y es paralelo al agravamiento del estado afectivo de los pacientes con EPOC en tratamiento con oxígeno.

El inicio de la depresión parece ser un factor de riesgo para el deterioro cognitivo.

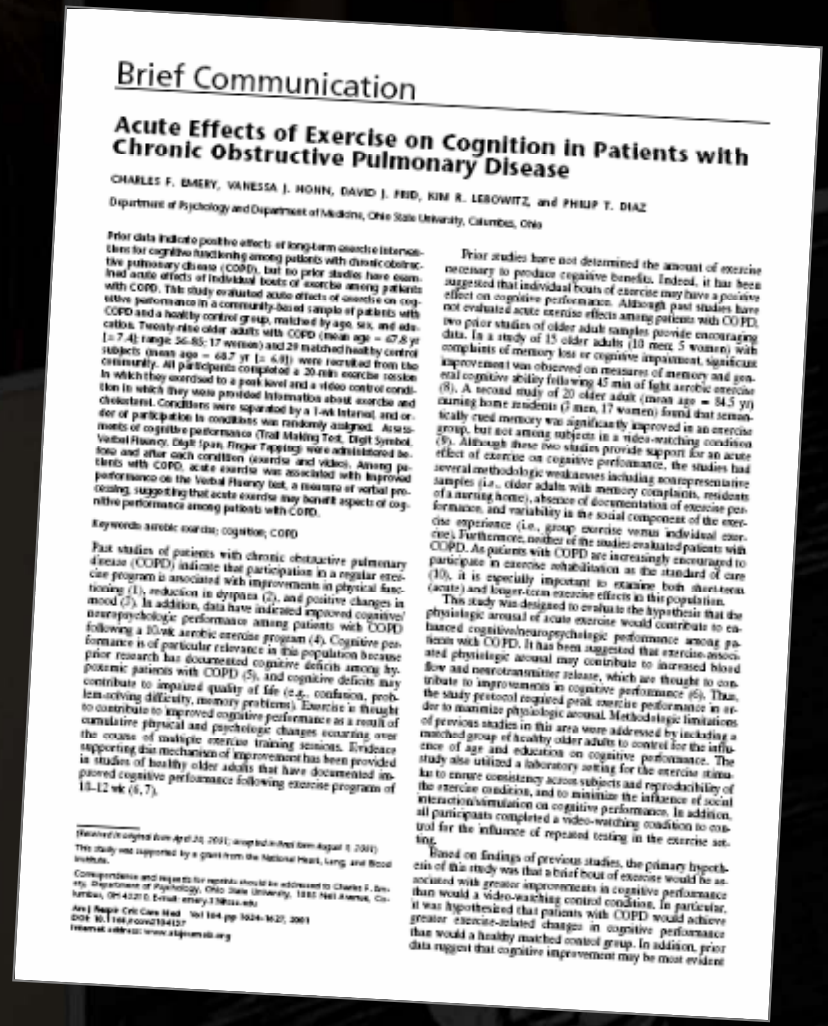
Búsqueda bibliográfica

2001



29 pacientes

efectos agudos beneficiosos del ejercicio en pctes con **EPOC**



Brief Communication

Acute Effects of Exercise on Cognition in Patients with Chronic Obstructive Pulmonary Disease

CHARLES F. EMERY, VANESSA J. HONN, DAVID J. FRID, KIM R. LEBOWITZ, and PHILIP T. DIAZ

Department of Psychology and Department of Medicine, Ohio State University, Columbus, Ohio

Prior data indicate positive effects of long-term exercise interventions for cognitive functioning among patients with chronic obstructive pulmonary disease (COPD), but no prior studies have examined acute effects of individual bouts of exercise among patients with COPD. This study evaluated acute effects of exercise on cognitive performance in a community-based sample of patients with COPD and a healthy control group, matched by age, sex, and education. Twenty-nine older adults with COPD (mean age = 67.8 yr [± 7.4]; range: 56–85; 17 women) and 29 matched healthy control subjects (mean age = 68.7 yr [± 6.8]) were recruited from the community. All participants completed a 20-min exercise session in which they exercised to a peak level and a video control condition in which they were provided information about exercise and cholesterol. Conditions were separated by a 1-wk interval, and order of participation in conditions was randomly assigned. Assessments of cognitive performance (Trail Making Test, Digit Symbol, Verbal Fluency, Digit Span, Finger Tapping) were administered before and after each condition (exercise and video). Among patients with COPD, acute exercise was associated with improved performance on the Verbal Fluency test, a measure of verbal processing, suggesting that acute exercise may benefit aspects of cognitive performance among patients with COPD.

Keywords: aerobic exercise; cognition; COPD

Past studies of patients with chronic obstructive pulmonary disease (COPD) indicate that participation in a regular exercise program is associated with improvements in physical functioning (1), reduction in dyspnea (2), and positive changes in mood (3). In addition, data have indicated improved cognitive/neuropsychologic performance among patients with COPD following a 10-wk aerobic exercise program (4). Cognitive performance is of particular relevance in this population because prior research has documented cognitive deficits among hypoxemic patients with COPD (5), and cognitive deficits may contribute to impaired quality of life (e.g., confusion, problem-solving difficulty, memory problems). Exercise is thought to contribute to improved cognitive performance as a result of cumulative physical and psychologic changes occurring over the course of multiple exercise training sessions. Evidence supporting this mechanism of improvement has been provided in studies of healthy older adults that have documented improved cognitive performance following exercise programs of 10–12 wk (6, 7).

Prior studies have not determined the amount of exercise necessary to produce cognitive benefits. Indeed, it has been suggested that individual bouts of exercise may have a positive effect on cognitive performance. Although past studies have not evaluated acute exercise effects among patients with COPD, two prior studies of older adult samples provide encouraging data. In a study of 15 older adults (10 men; 5 women) with complaints of memory loss or cognitive impairment, significant improvement was observed on measures of memory and general cognitive ability following 45 min of light aerobic exercise (8). A second study of 20 older adult (mean age = 84.5 yr) nursing home residents (3 men, 17 women) found that semantically cued memory was significantly improved in an exercise group, but not among subjects in a video-watching condition (9). Although these two studies provide support for an acute effect of exercise on cognitive performance, the studies had several methodologic weaknesses including nonrepresentative samples (i.e., older adults with memory complaints, residents of a nursing home), absence of documentation of exercise performance, and variability in the social component of the exercise experience (i.e., group exercise versus individual exercise). Furthermore, neither of the studies evaluated patients with COPD. As patients with COPD are increasingly encouraged to participate in exercise rehabilitation as the standard of care (10), it is especially important to examine both short-term (acute) and longer-term exercise effects in this population.

This study was designed to evaluate the hypothesis that the physiologic arousal of acute exercise would contribute to enhanced cognitive/neuropsychologic performance among patients with COPD. It has been suggested that exercise-associated physiologic arousal may contribute to increased blood flow and neurotransmitter release, which are thought to contribute to improvements in cognitive performance (6). Thus, the study protocol required peak exercise performance in order to maximize physiologic arousal. Methodologic limitations of previous studies in this area were addressed by including a matched group of healthy older adults to control for the influence of age and education on cognitive performance. The study also utilized a laboratory setting for the exercise stimulus to ensure consistency across subjects and reproducibility of the exercise condition, and to minimize the influence of social interaction/stimulation on cognitive performance. In addition, all participants completed a video-watching condition to control for the influence of repeated testing in the exercise setting.

Based on findings of previous studies, the primary hypothesis of this study was that a brief bout of exercise would be associated with greater improvements in cognitive performance than would a video-watching control condition. In particular, it was hypothesized that patients with COPD would achieve greater exercise-related changes in cognitive performance than would a healthy matched control group. In addition, prior data suggest that cognitive improvement may be most evident

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This study was supported by a grant from the National Heart, Lung, and Blood Institute.

Correspondence and requests for reprints should be addressed to Charles F. Emery, Department of Psychology, Ohio State University, 1885 Neil Avenue, Columbus, OH 43210. E-mail: emery.3@osu.edu

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DOI: 10.1164/ajrccm/164.9.2107
Internet address: www.atsjournals.org

Búsqueda bibliográfica

ORIGINAL COMMUNICATION

Cognitive impairment in chronic obstructive pulmonary disease
A neuropsychological and spect study

Raffaele Antonelli Incalzi
Camillo Marra
Alessandro Giordano
Maria Lucia Calcagni
Antonella Cappa
Salvatore Basso
Gabriella Pagliari
Leonello Fuso

15 pctes con EPOC

18 pctes sin hipoxemia

15 pctes con E. de Alzheimer

SPECT cerebral

Búsqueda bibliográfica

Fig. 3 Two SPECT transaxial images illustrate the cerebral blood flow in a representative patient with Alzheimer's disease (group AD): perfusion is severely reduced in associative areas corresponding to the occipito-temporal regions of the left hemisphere and to both anterior and medial left temporal lobe. Mild to moderate hypoperfusion of ventral thalamus is also evident.

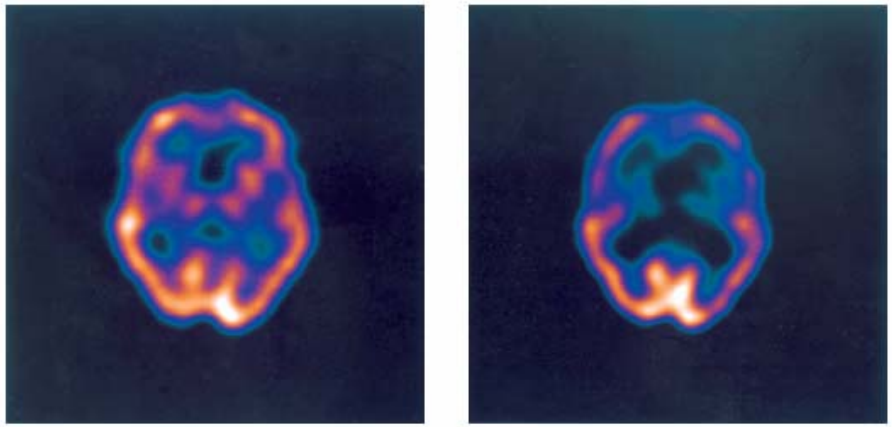
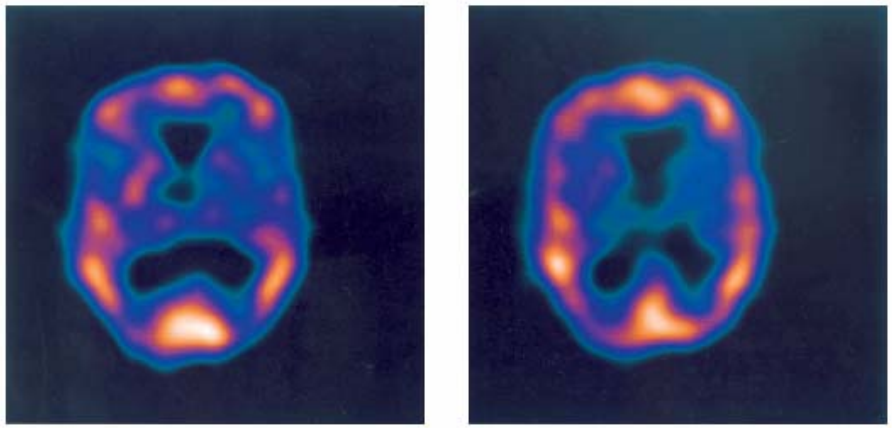


Fig. 4 Two SPECT transaxial images illustrate the cerebral blood flow in a representative patient with hypoxemic COPD (group H): perfusion is moderately reduced in frontal, anterior temporal and ventral thalamic regions.



Búsqueda bibliográfica

2007

mayor latencia de **P300**
en pctes con **EPOC**

P300 se puede considerar como marcador de deterioro cognitivo

ELSEVIER

Clinical Neurology and Neurosurgery

The evaluation of cognitive functions with P300 test for chronic obstructive pulmonary disease patients in attack and stable period

Ganze Kirkil[a,*], Tuncer Tug[b], Eda Ozel[a], Serpil Bulut[c], Aslan Tekatas[c], Mehmet Haindi Muz[a]

Abstract

Objectives: Hypoxia, in chronic obstructive pulmonary disease (COPD), leads to a decrease in cerebral perfusion and an impairment of some cognitive abilities. We aimed to investigate the relation between arterial blood gas analysis (ABA) and pulmonary function test (PFT) parameters with cognitive functions of COPD patients during attack and stable period.

Patients and methods: ABA, PFT, P300 tests of 30 patients in stabilized period and 30 patients in attack, and 17 healthy controls were evaluated.

Results: When both COPD groups and controls were compared, it was seen that latency of P300 was shorter in the control group ($p < 0.001$), but there was no difference between COPD groups ($p > 0.05$). P300 amplitude measures were lower in both COPD groups than control group, but it was not statistically significant ($p > 0.05$).

When we compared the measures of attack group, we saw that arterial oxygen tension (PaO_2), arterial oxygen saturation (SaO_2), forced expiratory volume in 1 s (FEV_1), FEV_1/forced vital capacity (FVC) values decreased ($p < 0.001$), and P300 latency shortened ($p < 0.05$) in attack group during stable period.

P300 latency correlated significantly with PaO_2 ($r = -0.555$, $p < 0.001$), SaO_2 ($r = -0.424$, $p < 0.01$), FEV_1 ($r = -0.441$, $p < 0.001$), FEV_1/FVC ($r = -0.477$, $p < 0.001$) values, and age ($r = 0.320$, $p < 0.05$). P300 amplitude is only correlated with PaO_2 ($r = 0.256$, $p < 0.05$).

Conclusions: Longer latency of P300 appears to be an expected impact of COPD. P300 test can be considered as a potential objective marker of cognitive impairment.

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Keywords: Chronic obstructive pulmonary disease; Cognitive function; P300 latency; P300 amplitude; Pulmonary function test; Arterial blood gas analysis

1. Introduction

The common basis of chronic obstructive pulmonary disease (COPD) is an obstruction of airflow in the lungs which leads to a decrease in pulmonary ventilation, an increase on dead air space in the lungs, and a hypoxia and hypercarbia due to poor distribution of ventilation to perfusion in the lung parenchyma. Progressive hypoxia leads to an increase in blood viscosity and pulmonary vascular resistance which results in cor pulmonale and a decrease in cerebral perfusion [1].

Clinicians have recognized for some time that patients with advanced COPD can develop delirium or intellectual impairment secondary to hypoxia and hypercarbia [2]. In hypoxemic COPD patients, the mechanism of neuronal damage is the impairment of oxidative phosphorylation and the generation of free radicals [3,4]. It is shown that cognitive impairment frequently occurs in elderly COPD patients. Drawing impairment is a risk factor for mortality and might improve the assessment of hypoxemic COPD patients [5]. Older individuals who have COPD may be affected in three

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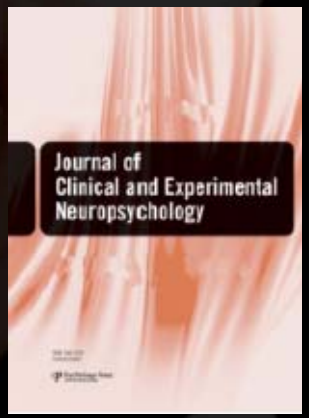
Búsqueda bibliográfica



2009

Cognitive Decline among Patients with Chronic Obstructive Pulmonary Disease

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AT A GLANCE COMMENTARY

Scientific Knowledge on the Subject

Although prior cross-sectional and clinical studies have suggested a relationship between chronic obstructive pulmonary disease and cognitive decline, longitudinal evidence of this relationship is lacking.

What This Study Adds to the Field

In this study, we showed that severe chronic obstructive lung disease is associated with poorer cognitive performance on standardized measurements over time.

estudio longitudinal

4181 pacientes

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Búsqueda bibliográfica

severidad EPOC

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deterioro cognitivo global

2009

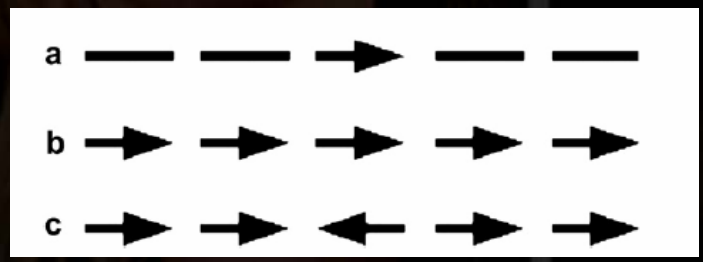
Búsqueda bibliográfica

ANT

SPM

VLT

NVLT



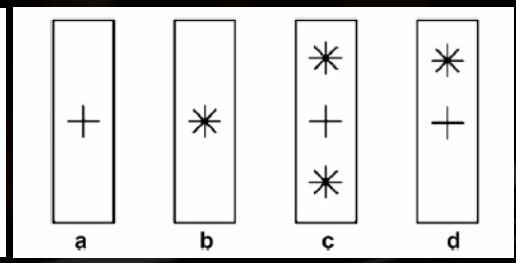


Table 2 Results of neuropsychological testing separated for patients with COPD and healthy controls. (See Appendices for methodological details.)

	COPD mean (SD)	Controls mean (SD)	*t*-score	Effect sizes ES (Confidence interval)
ANT				
Relative alerting (% of mean)	4.2 (5.2)	7.1 (4.2)	3.44**	−0.61 (−0.98 to −0.24)
No cue (ms)	680 (121)	622 (110)		
Double cue (ms)	651 (121)	576 (114)		
Relative orienting (% of mean)	3.2 (4.3)	5.5 (5.2)	2.61*	−0.48 (−0.84 to −0.12)
Centre cue (ms)	657 (120)	588 (113)		
Spatial cue (ms)	637 (114)	555 (107)		
Relative conflict (% of mean)	11.8 (5.6)	11.9 (5.3)	0.06	−0.02 (−0.38 to 0.34)
Incongruent (ms)	714 (127)	640 (128)		
Congruent (ms)	632 (118)	563 (111)		
Overall reaction time (ms)	649 (113)	583 (110)	3.25**	0.59 (0.22 to 0.95)
Accuracy (%)	96.7 (3.9)	98.3 (1.7)	2.98**	−0.53 (−0.89 to −0.16)
VLT				
Corr. YES (percentile)	40.9 (25.6)	50 (10)	2.56*	−0.47 (−0.83 to −0.10)
False YES (percentile)	35.6 (32.6)	50 (10)	−3.18*	−0.59 (−0.96 to −0.23)
Diff. corr./false (percentile)	31.9 (27.1)	50 (10)	−4.79**	−0.88 (−1.26 to −0.51)
NVLT				
Corr. YES (percentile)	55.7 (25.7)	50 (10)	1.57	0.29 (−0.07 to 0.65)
False YES (percentile)	21.3 (24.6)	50 (10)	−8.24**	−1.52 (−1.92 to −1.11)
Diff. corr./false (percentile)	23.8 (20.3)	50 (10)	−9.12**	−1.63 (−2.04 to −1.21)
SPM				
Result (percentile)	9.9 (13.2)	50 (10)	−21.89**	−3.4 (−3.96 to −2.84)

Note. (*$p < 0.05$, **$p < 0.01$).
Abbreviations: ANT = Attention Network Test, VLT = Verbal Learning Test, NVLT = Nonverbal Learning Test, SPM = Standard Progressive Matrices.

and the winner is …

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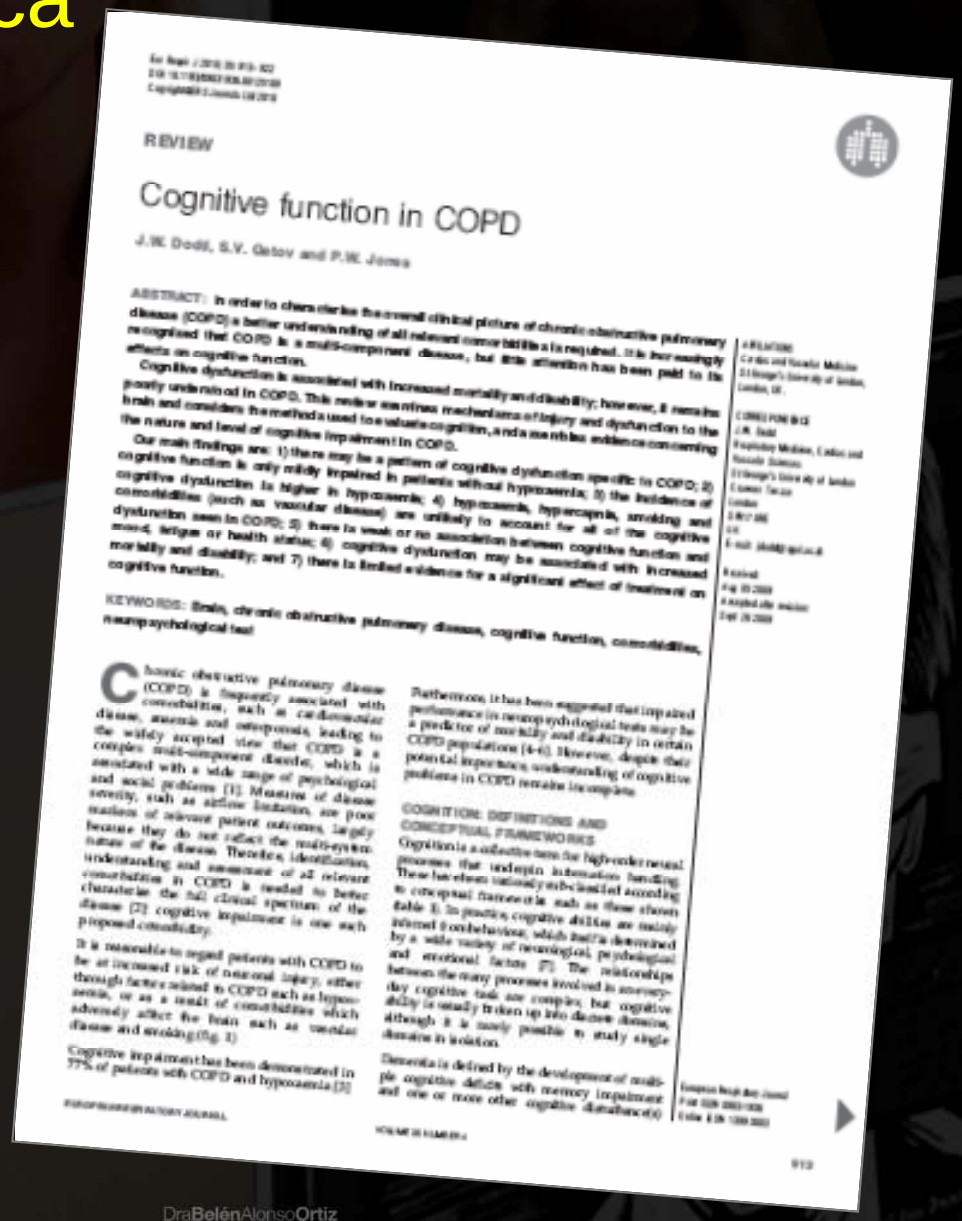
Búsqueda bibliográfica

2010

Revisión muy completa

94 citas

tablas y figuras



REVIEW

Cognitive function in COPD

J.W. Dodd, S.V. Getov and P.W. Jones

ABSTRACT: In order to characterise the overall clinical picture of chronic obstructive pulmonary disease (COPD) a better understanding of all relevant comorbidities is required. It is increasingly recognised that COPD is a multi-component disease, but little attention has been paid to its effects on cognitive function.

Cognitive dysfunction is associated with increased mortality and disability; however, it remains poorly understood in COPD. This review examines mechanisms of injury and dysfunction to the brain and considers the method used to evaluate cognition, and a manifold evidence concerning the nature and level of cognitive impairment in COPD.

Our main findings are: 1) there may be a pattern of cognitive dysfunction specific to COPD; 2) cognitive function is only mildly impaired in patients without hypoxaemia; 3) the incidence of cognitive dysfunction is higher in hypoxaemia; 4) hypoxaemia, hypercapnia, smoking and comorbidities (such as vascular disease) are unlikely to account for all of the cognitive dysfunction seen in COPD; 5) there is weak or no association between cognitive function and mood, fatigue or health status; 6) cognitive dysfunction may be associated with increased mortality and disability; and 7) there is limited evidence for a significant effect of treatment on cognitive function.

KEYWORDS: Brain, chronic obstructive pulmonary disease, cognitive function, comorbidities, neuropsychological test

Chronic obstructive pulmonary disease (COPD) is frequently associated with comorbidities, such as cardiovascular disease, anaemia and osteoporosis, leading to the widely accepted view that COPD is a complex multi-component disorder, which is associated with a wide range of psychological and social problems [1]. Measures of disease severity, such as airflow limitation, are poor markers of relevant patient outcomes, largely because they do not reflect the multi-system nature of the disease. Therefore, identification, understanding and assessment of all relevant comorbidities in COPD is needed to better characterise the full clinical spectrum of the disease [2]. cognitive impairment is one such proposed comorbidity.

It is reasonable to regard patients with COPD to be at increased risk of neuronal injury, either through factors related to COPD such as hypoxaemia, or as a result of comorbidities which adversely affect the brain such as vascular disease and smoking (fig. 1).

Cognitive impairment has been demonstrated in 77% of patients with COPD and hypoxaemia [3].

Furthermore, it has been suggested that impaired performance in neuropsychological tests may be a predictor of mortality and disability in certain COPD populations [4–6]. However, despite their potential importance, understanding of cognitive problems in COPD remains incomplete.

COGNITION: DEFINITIONS AND CONCEPTUAL FRAMEWORKS

Cognition is a collective term for high-order neural processes that underpin information handling. These have been variously subclassified according to conceptual frameworks such as those shown in table 1. In practice, cognitive deficits are mainly inferred from behaviour, which itself is determined by a wide variety of neurological, psychological and emotional factors [7]. The relationships between the many processes involved in everyday cognitive tasks are complex, but cognitive ability is usually broken up into discrete domains, although it is rarely possible to study single domains in isolation.

Dementia is defined by the development of multiple cognitive deficits with memory impairment and one or more other cognitive disturbance(s)

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TABLE 2 Studies of neuropsychological function in patients with chronic obstructive pulmonary function

First author [Ref.]	Patients n	FEV_1	$\dot{P}a,O_2$ kPa on air	Cognitive function							
				Attention	Perception	Memory and learning	Verbal and language	Construction	Concept formation and reasoning	Executive	Motor
Hypoxaemia											
Krop [15]	10	0.77 L	6.9					●			●
Grant [3]	203	0.74 L	6.8	●	●	●	●	●	●	●	●
Huppert [16]	11	NA	7.9			●					
D'Salla [17]	28	NA		●							
Incalzi [18]	36	22%	7.9	●		●	●	●	●		
Incalzi [19]	42	34%	6.5			●					
Stuss [20]	18	NA		●		●					
Hjalmarson [21]	10	38%	6.7	●	●	●			●	●	●
Antonelli-Incalzi [22]	15/18#	NA	7.3/9.3	●		●			●		
Kozora [23]	20/19¶	24%	8.1/7.8	●		●	●			●	●
Antonelli-Incalzi [24]	149	37%	7.65	●		●	●	●	●		
Non/mild hypoxaemia											
Fix [25]	66	39%	8.9	●	●	●	●	●	●	●	●
Prigatano [26]	100	37%	8.8	●	●	●	●	●	●	●	●
Vos [27]	39	33%	8.9	●							
Kozora [28]	32	FEV_1/FVC 44%	9.2								
Liesker [29]	30	49%	10.1	●	●			●		●	●
Favalli [30]	20	NA	8.8	●		●	●				●
Proportion of patients demonstrating cognitive dysfunction				**(795/827) 96%**	**(409/430) 95%**	**(709/781) 90%**	**(613/689) 89%**	**(594/648) 92%**	**(579/629) 92%**	**(463/492) 94%**	**(726/776) 94%**

FEV_1: forced expiratory volume in 1 s; $\dot{P}a,O_2$: mean arterial oxygen tension; NA: not applicable; FVC: forced vital capacity. The white shading indicates cognitive function tested and the circles represent demonstration of cognitive function. #: 15 non-hypoxaemic and 18 hypoxaemic patients; ¶: 20 medical therapy and 19 lung volume reduction surgery patients.

Búsqueda bibliográfica

pacientes con deterioro cognitivo

EPOC

atención	96%
percepción	95%
motor	94%
ejecución	94%
construcción	92%
razonamiento	92%
memoria	90%
lenguaje	89%

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TABLE 4 Lung function and cognition in chronic obstructive pulmonary disease (COPD) patients

First author [Ref.]	Patients n	Description	Measures		Correlations
			Lung function	Cognition	
Fix [25]	66	Longitudinal Hypoxic COPD	FEV_1	NPT	Attention, vis-motor and perception
Grant [3]	203	Case control Hypoxaemic COPD	FEV_1	NPT	Nil
Prigatano [26]	100	COPD mild hypoxia form IPPB trial	FEV_1	NPT	Memory
Incalzi [43]	84	Prospective COPD	FEV_1	MMSE	Decline in MMSE worse in severe airflow obstruction
Kozora [28]	32	Mildly hypoxic COPD	Full PFT	NPT	Nil
Etnier [44]	98	Older COPD mild disease and hypoxia	Full PFT	NPT	FVC associated with working memory 6MWT associated with fluid intelligence and processing speed
Antonelli-Incalzi [45]	381	COPD Elderly	GOLD stage	NPT/MMSE	Nil
Liesker [29]	30	Non-hypoxaemic COPD Case control	FEV_1	NPT	Nil
Ohrui [46]	135	Respiratory failure on LTOT *versus* healthy cross section	FEV_1	MMSE	Nil

FEV_1: forced expiratory volume in 1 s; NPT: neuropsychological tests; IPPB: intermittent positive pressure breathing; MMSE: mini mental score examination; PFT: pulmonary function tests; FVC: forced vital capacity; 6MWT: 6-min walk test; GOLD: Global Initiative for Chronic Obstructive Lung Disease; LTOT: long-term oxygen therapy.

Estudios de función pulmonar y cognición en pacientes con EPOC

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Conclusiones

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Conclusiones

- La EPOC conlleva daño ó disfunción neuronal.
- Este daño es independiente de otras comorbilidades.
- La disfunción cognitiva puede estar asociada con una mayor mortalidad y discapacidad.
- A pesar de su importancia potencial, sigue siendo un trastorno poco estudiado y mal entendido.
- Son necesarios más estudios para validar métodos de evaluación, detección y tratamiento.

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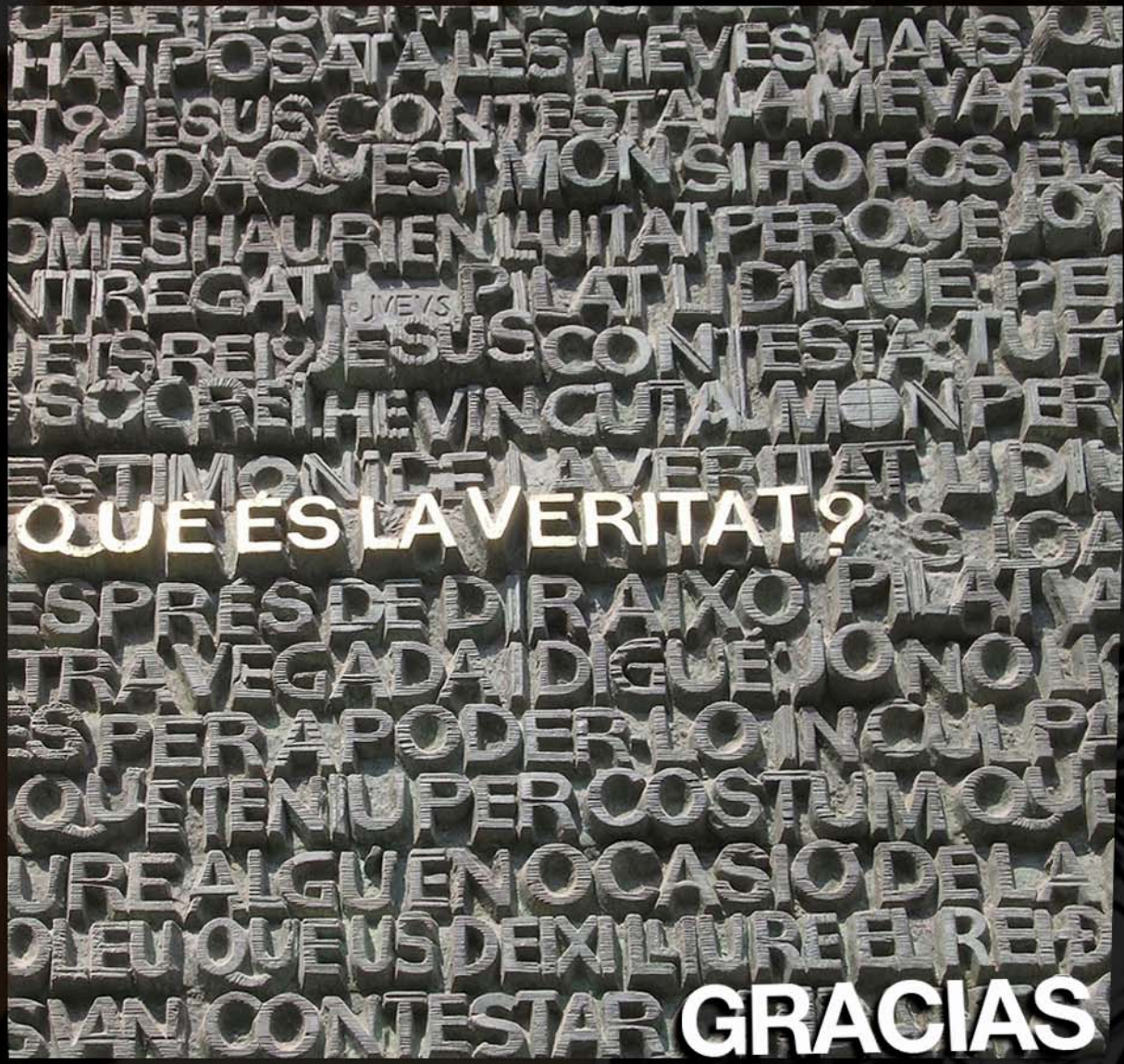

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