

DEPRESSION IN PATIENTS WITH ASTHMA AND COPD

Radu CRIȘAN DABIJA: M.D., Drd., University of Medicine and Pharmacy “Gr. T. Popa” Iași;
Family Medicine Resident, Clinical Pneumoftiziologie Hospital Iași, Romania

Roxana CHIRIȚĂ: M.D., Ph.D., Professor, Dept. of Psychiatry, University of Medicine and Pharmacy “Gr. T. Popa” Iași; Senior Psychiatrist, Clinical Psychiatric Hospital “Socola” Iași

Ana RINDER: Psychologist, “Ana Rinder” Individual Psychology Practice

Traian MIHĂESCU: M.D., Ph.D., Professor, University of Medicine and Pharmacy “Gr. T. Popa” Iași, Department of Pneumology, Senior Pneumologist, Head of Pneumology Clinic, Clinical Pneumoftiziologie Hospital Iași

Abstract:

Background

Chronic obstructive pulmonary disease – COPD is a common chronic lung disease that has a significant impact on the quality of life of those with the condition. It impacts on patients’ lives through restriction of activities, interference with sleep and limitation of social life. These patients are not only limited in their activities due to respiratory disease, but also have depressive symptoms caused by main disability and also the glucocorticoid-based drugs administered.

Objective

The purpose of this work is to investigate the depressive symptoms – with the help of a psychologist – on patients participating in a clinical trial for asthma/COPD natural medication.

Method

We selected 62 patients out of our 128 pool, all under glucocorticoid medication, and conducted a psychological interview using the HAM-D17 scale for reporting the results.

Results

After calculating the scores, we found out that 43% of our patients experienced depressive symptoms.

Conclusions

Both asthma and COPD are diseases that manifest along with anxiety and interference with common daily activities. Also, chronic pulmonary obstructive diseases are treated with glucocorticoid-based drugs and this association of medicines and social factors can be the triggers for depression in patients with asthma or COPD.

Keywords: asthma-management, copd-management, depression-copd, glucocorticoid-depression

Rezumat**Background**

BPOC este o patologie ce reduce, în mod semnificativ, calitatea vieții și are un impact social și psihologic deosebit. Prin manifestările patologice, atât astmul bronșic, cât și BPOC restricționează activitățile zilnice ale pacienților, cresc nivelul anxietății prin teama de a nu face o nouă criză și limitează extrem de mult calitatea vieții. Acești pacienți nu numai că au de suferit datorită limitărilor impuse de boala în sine, însă manifestă și o simptomatologie depresivă, datorită statusului de incapacitate respiratorie, dar și datorită efectelor secundare ale medicației cu glucocorticoizi.

Obiectiv

Scopul acestui studiu a fost de a investiga, cu ajutorul unui psiholog, apariția simptomelor depresive la pacienții cu astm bronșic și BPOC ce participau la un studiu de testare a efectelor haloterapiei (terapia cu aerosoli salini).

Metodă

Am selectat din grupul inițial de 128 de pacienți un număr de 62 pacienți (aleși arbitrar și aleatoriu) pe care s-a condus un interviu psihologic, aplicându-se ulterior criteriile din scala HAM-D17 pentru depresie și s-au centralizat rezultatele.

Rezultate

După calcularea scorurilor și centralizarea rezultatelor, am observat că un procent impresionant de 43% dintre pacienții intervievați de către psiholog au simptome depresive, conform scalei HAM-D17.

Concluzii

Atât astmul bronșic, cât și BPOC se manifestă cu limitarea activităților zilnice și anxietate. De asemenea, atât asocierea medicației ce conține glucocorticoizi, cât și factorii sociali sunt responsabili pentru declanșarea simptomatologiei depresive la pacienții cu astm bronșic și BPOC.

Cuvinte-cheie: astm, BPOC, BPOC-management, depresie-glucocorticoizi, depresie-BPOC

INTRODUCTION

The third cause of death in Romania (and the fifth in the world), COPD is expected to affect 100.000 new patients in Romania per year until 2020. These data are official Ministry of Health statistics but there is a good chance that many COPD patients are not under proper treatment due to poor access to medication and clinics. COPD is a disease that causes an irreversible limitation of the air flow, usually progressive and is associated with an abnormal inflammatory response of the lungs to inhaled noxious particles or gases. Pathological changes in chronic obstructive pulmonary disease (COPD) occur in the large (central) airways, the small (peripheral) bronchioles, and the lung parenchyma. Up to 90% of COPD is caused by smoking and 95% of COPD patients are, have been smokers or have a significant history of being exposed to cigarette smoke.

For decades, the psychiatric morbidity of medically ill patients has been acknowledged. However, there has been relatively little focus on psychiatric disorders in patients with chronic obstructive pulmonary disease (COPD).

The association between COPD and psychiatric disorders, in particular generalized anxiety, panic anxiety and depression, has been acknowledged for many years. The prevalence of psychiatric comorbidity in these patients, as well as the effect of treatment and the prognosis remains unsettled (H.F., M.E., V.A., & al., 2000).

In a study by P.M. Yellowlees (Yellowlees, Alpers, Bowden, & al, 1987), the authors compared COPD patients with and without comorbid psychiatric disorders. Patients with psychiatric comorbidity were spending twice as long time in hospital as the comparison group. Also, they found that the quality of life of the COPD patients was impaired in all dimensions compared to healthy controls. High impact was seen both on ambulation, mobility, sleep and rest. If COPD patients are further suffering from comorbid psychiatric disorder, this will add to the psychosocial dysfunction. Additionally, substantial marital problems are reported by patients and attributed to

their illness. Furthermore, the role of medication side-effects should be considered. Many COPD patients are taking several medications but since all of them are or are to be initiated on steroid treatment, the probability that they will develop depressive symptoms is much higher. The unwanted behavioural effects of anabolic steroids are widely known, but those of glucocorticoid therapy, though recognised for over 45 years, receive less attention. In Boston Collaborative Drug Surveillance Program: Acute adverse reactions to prednisone in relation to dosage – published in Clinical Pharmacology magazine in 2004 is stated that up to 20% of patients on high dose glucocorticoids report psychiatric disorders including depression, mania, psychosis, or a mixed affective state.

Dysregulation of the hypothalamo-pituitary adrenal axis in depression is one of the oldest and most consistent findings in biological psychiatry. A large scale meta-analysis of over 140 studies using the low dose dexamethasone suppression test illustrated that persistent adrenocortical hyperactivity is a robust indicator of poor prognosis and a weaker predictor of suicide in depression (Ribeiro, Tandon, Grunhaus, & Greden, 1993). Medical disorders which feature sustained overdrive of the hypothalamo-pituitary axis carry an unexpectedly high risk of mood disorders.

Overall, data from conditions of both exogenous and endogenous steroid excess provide support for a glucocorticoid theory of depression. But, if glucocorticoids contribute to the syndrome of major depression, several vexing questions remain. If patients with primary depression have long term cortisol hyper secretion, why don't they have the peripheral stigmata seen in Cushingoid patients? One explanation, which is mooted by some authors to be central to the pathophysiology of depression is that of partial glucocorticoid resistance at the receptor level. This receives some support from in-vitro studies of type II glucocorticoid receptors. However, many depressed patients do show some of the peripheral and central manifestations of Cushing's disease, including immunosuppression, osteoporosis, central obesity, menstrual irregularities, and muscle weakness, as well as sleep disturbances and cognitive impairment (Pariante, Nemeroff & Miller, 1995).

Immunocytochemical analysis of postmortem hypothalamic from patients with depression have shown a fourfold increase in corticotrophin releasing factor expressing neurons relative to age matched controls (Raadsheer, Hoogendijk, Stam, Tilders & al, 1994). Blocking adrenal steroid synthesis using metyrapone results in augmented levels of adrenocorticotrophic hormone in depressed individuals compared with controls. This, together with blunting of responses to pituitary challenge tests, suggests that peripheral hypercortisolaemia masks central overdrive of the hypothalamo-pituitary axis in depression, via feedback inhibition by glucocorticoid.

This pathological overdrive may be maintained by the neurotoxic actions of glucocorticoids on the hippocampus, since the hippocampus is the principal locus for feedback inhibition of the hypothalamo-pituitary axis and also the site most vulnerable to damage mediated by glucocorticoids (Mitchell & O'Keane, 1998).

In the study, we conducted in 2010 testing the use of the Dry-Salt-Inhaler™ on adults with asthma and COPD (Crişan & Mihăescu, 2010) the investigators observed a tendency of depression symptoms appearing in patients with COPD and asthma diagnosed more than 5 – 10 years ago. Although our Life-quality questionnaire applied to patients that were using the salt inhaler additional to their current COPD and asthma medication, included questions concerning the quality of sleep and the disease interference with daily activity, we additionally tried to investigate whether these patients are experiencing a hidden mild to moderate depression, according to their illness state. So we asked a psychologist to help us investigate the depressive mood.

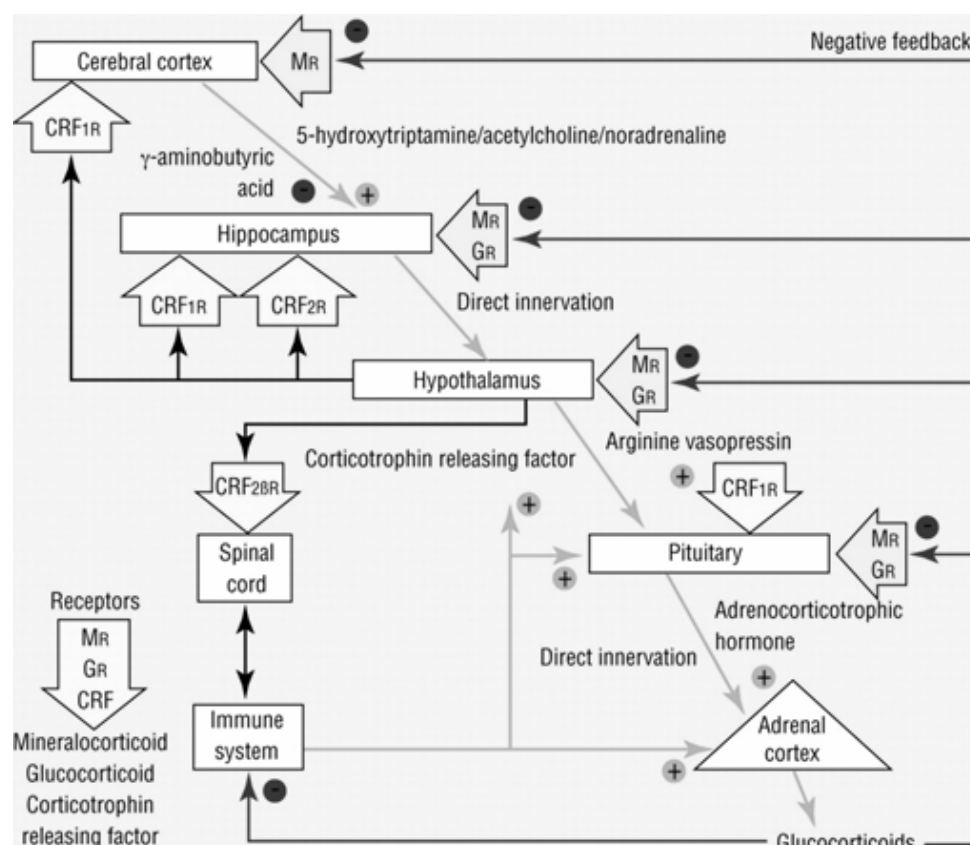


Fig. 1. The hypothalamo-pituitary axis in depression

MATERIALS AND METHODS

Our study was conducted on a patient pool of 128 individuals selected as following:

Inclusion criteria:

A subject was considered eligible for inclusion if all of the following applied:

- diagnosed with stage 2 or 3 COPD, more than 1 year in treatment;
- diagnosed with asthma (mild, both persistent or intermittent, moderate or severe), more than 1 year in treatment;
- was able to understand and endorsed the written informed consent;
- presented no other serious respiratory pathology (such as tuberculosis, lung cancer, pulmonary fibrosis, etc.).

Exclusion criteria:

- had a recent current cardio-vascular diagnosis, such as: arterial hypertension, heart failure, arrhythmias;
- had a life threatening diagnosis or one that could interfere with study procedures;
- being pregnant or having the intention to remain pregnant;
- being under 18 years old (as there is no data to sustain safety in child administration);
- sodium chloride intolerance (the Dry-Salt-Inhaler contains NaCl particles);
- severe psychiatric / neurological condition;
- patient discontinuation due to abandonment.

We selected half of these patients (61) on which we applied the HAM-D17 scale in order to investigate the depressive symptoms that patients may experience due to long-term treatment with steroids and the insight of the chronic, non-curative COPD disease state. The selection criteria were:

- Having depressive symptoms, such as unexplained sadness or visible anxiety and thoughts of their condition – worsening, trouble sleeping or worrying too much.
- Being on glucocorticoid treatment for more than 5 years (for example, on budesonid-formoterol inhaler).

At this stage, a psychologist conducted an interview with the patients.

RESULTS

62 patients responded to our psychological interview using the HAM-D17 scale scores, 40 patients were female patients and 22 were male patients with ages between 28 and 76 years, 50 diagnosed with moderate and severe COPD and 12, with asthma.

We found out that 26 out of 61 patients experienced depressive symptomatology.

HAM D-17 Score	Scale Score under 5	Scale Score between 5 – 14	Scale Score between 14 – 18	Scale Score Over 20
No. of Patients	35	13	12	1

Table I. *The HAM-D17 Scores*

This representing a total percent of 43% of the initial pool.

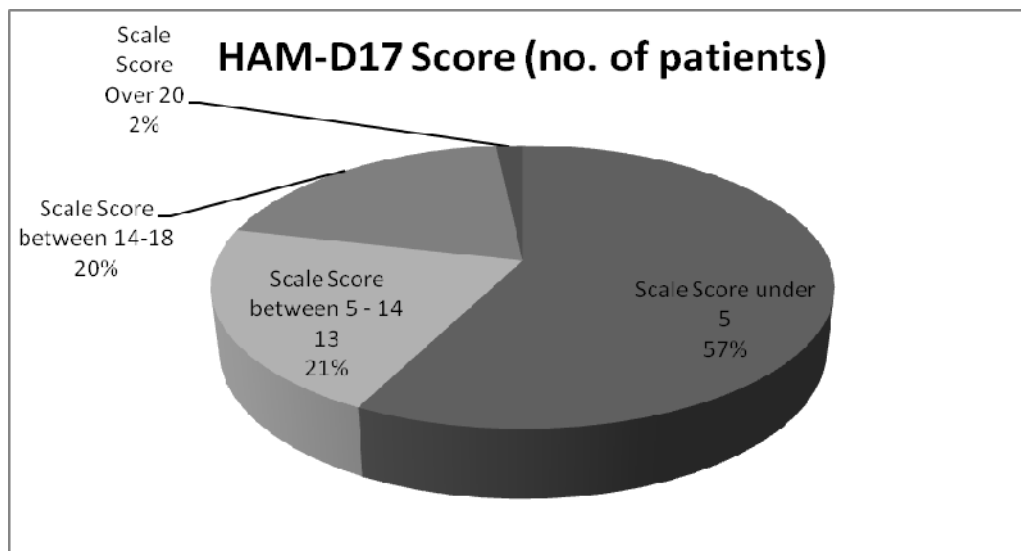


Fig. 2. *The Ham-D17 scores*

Furthermore, we analyzed the data from several items included in HAM-D17 scale and we found out that, at items concerning the quality of sleep and anxiety, our patients had scores of 2 and 3 – our interpretation being that patients are experiencing both sleep and anxiety issues. Overall, the presence of depressive symptoms in our patients' pool is significantly – meaning that somatic symptoms that these patients experience are probably amplified by their depressive state.

CONCLUSIONS AND DISCUSSIONS

Many of asthma and COPD patients experience depressive symptoms hidden or revealed within their main pathology. There is, however, room for errors. The somatic symptoms that these patients are experiencing are interfering with the sense of the scale. The HAM-D17 scale is referring to somatic symptoms that one should experience within the depressive state – such as backaches, muscle aches, heaviness in limbs and head or loss of energy and fatigability. Some of these symptoms are present also within the general presentation of COPD so interfering might have occurred. Also, anxiety is a common but strictly punctual symptom present during the asthma or COPD air-crisis. Some of these patients develop permanent anxiety (and this is what we found out using the HAM-D17 scale) and hypochondriasis mainly living with the fear of another air-crisis (suffocation).

As impressive as these figures are, they probate the R.L. Mikkelsen study (MIKKELSEN, MIDDELBOE & PISINGER, 2004) which states that doctors are aware of psychiatric states that patients somatically ill present frequently, but symptoms of depression and anxiety are rarely guided to psychiatric examination or psychological help.

Furthermore, all the patients that participated in this side-investigation of our clinical trial¹ - part of the author's PhD thesis – were under treatment with corticoid medication.

In patients with COPD seen in the emergency department, the presence of anxiety or depression was associated with significantly higher admission rates (52% of patients with anxiety or depression compared with 19% of those without. This suggests that depression and anxiety occur in patients with more severe COPD, or that depression and anxiety lead to a worsening of the COPD. In the same study, patients requiring readmission had higher scores on the Hospital Anxiety and Depression (HAD) scale than patients not requiring readmission. In an outpatient population, the presence of depression or anxiety led to a doubling of the number of days admitted to hospital (MIKKELSEN, MIDDELBOE & PISINGER, 2004).

This information must set an alarm signal to all doctors that prescribe glucocorticoids for a long period of time – as this theory for depression probates clinically with patients suffering from COPD and asthma. Even if these patients have a disease-based depressive symptomatology, the glucocorticoid theory might be a further interesting idea to study – probably in a clinical trial involving pneumologists, endocrinologists and psychiatrists.

Acknowledgments and disclosure

The authors declare that they have no potential conflicts of interest to disclose.

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¹ The Effects of Using a Dry-Salt-Inhaler on patients with Asthma and COPD