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Case Report

Exploring the Psychological Effects of Formoterol Fumarate and Budesonide Inhaler: A Case Study on Induced Depression

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Abstract

A patient with a longstanding history of chronic obstructive pulmonary disease (COPD) presented with significant weight loss, loss of appetite, fatigue, and sleep disturbance persisting for 15 days, alongside a rapid weight loss of 15 kg in 10 days. Initial evaluations revealed bilateral pleural effusion, complicating her clinical picture. Despite no prior psychiatric history, a psychiatric evaluation indicated severe sleep disturbances, reduced food intake, and pronounced fatigue, leading to a diagnosis of depression. The patient's regular treatment included an inhaler containing formoterol fumarate and budesonide for 35 years. Notably, the inhaler's long-term use may have contributed to her depressive symptoms. Emergency treatment involved intravenous administration of normal saline with multivitamins, pantoprazole to manage potential gastrointestinal complications, and a multivitamin and multimineral syrup. Psychiatric management included sertraline, an SSRI, to ameliorate depressive symptoms and zolpidem for sleep disturbances. This multidisciplinary approach resulted in significant improvement. Upon discharge, the patient was stable and prescribed a regimen including sertraline, pantoprazole, mirtazapine, zolpidem, and multivitamins to support her long-term recovery and well-being. The case underscores the potential for inhaler-induced depression in patients with COPD and the importance of a comprehensive treatment plan.

Keywords: Depression, Adverse event of inhaled drugs, chronic obstructive pulmonary disease, Weight loss.

Introduction

Chronic obstructive pulmonary disease (COPD) are more likely than the general population to develop psychological discomfort, which can include anxiety and/or depression. This article examines the etiology, clinical manifestations, and implications of mental health issues in individuals with COPD. It delves deeply into the population's current screening, diagnosis, and treatment. Chronic obstructive pulmonary disease (COPD) patients are more likely than the general population to experience comorbid illnesses including anxiety and/or depression, which increases their symptom burden and rehospitalization rates. It's critical to look into the biology and clinical effects of mental health on COPD patients. According to this review paper, there is a greater rate of rehospitalization among COPD patients who experience anxiety or depression. It examines the available screening and diagnosis techniques at the moment. Depending on the degree of their depression,

COPD patients can be treated with either pharmaceutical or non-pharmacological therapies. individuals with mild depression who have COPD can benefit from cognitive behavioural therapy and pulmonary rehabilitation; individuals with severe or chronic depression can receive medication-assisted treatment. The impact of COPD on quality of life has led to increased study attention to the link between COPD and mental health¹.The standard chronic lung ailment chronic obstructive pulmonary disease significantly lowers the quality of life for people who suffer from it. Patients' lives are affected by it in ways such as activity restriction, sleep disturbance, and social life restrictions. The enormous impact COPD has on a patient's mental health is not surprising. It is commonly known that anxiety and sadness are linked to COPD. This essay examines current findings showing how COPD affects mood. It draws from the author's understanding of the research on the relationship between depression and chronic illness. Patients' mental health is significantly impacted

negatively by COPD—individuals with COPD experience higher rates of anxiety and depression than the general population. Patients with COPD have a 1.69 relative risk of getting depression compared to those without COPD. COPD patients may even have higher rates of anxiety and depression when compared to other chronic concomitant diseases². Furthermore, dyspnoea and anxiety disorders have a direct relationship². Dyspnoea and a worsening of the underlying COPD symptoms can occur in anxious individuals for no apparent reason; this is often the case in the setting of panic disorder and agoraphobia, which can lead to an increase in hospital stays³. Our objectives in this current narrative review are to outline the relationship between COPD, anxiety, and depression as well as to illustrate the range of approaches available for both screening and treating COPD. The standard chronic lung ailment chronic obstructive pulmonary disease significantly lowers the quality of life for people who suffer from it. Patients' lives are affected by it in ways such as activity restriction, sleep disturbance, and social life restrictions⁴. The enormous impact COPD has on a patient's mental health is not surprising. It is commonly known that anxiety and sadness are linked to COPD. This essay examines current findings showing how COPD affects mood⁵.

Patient Information:

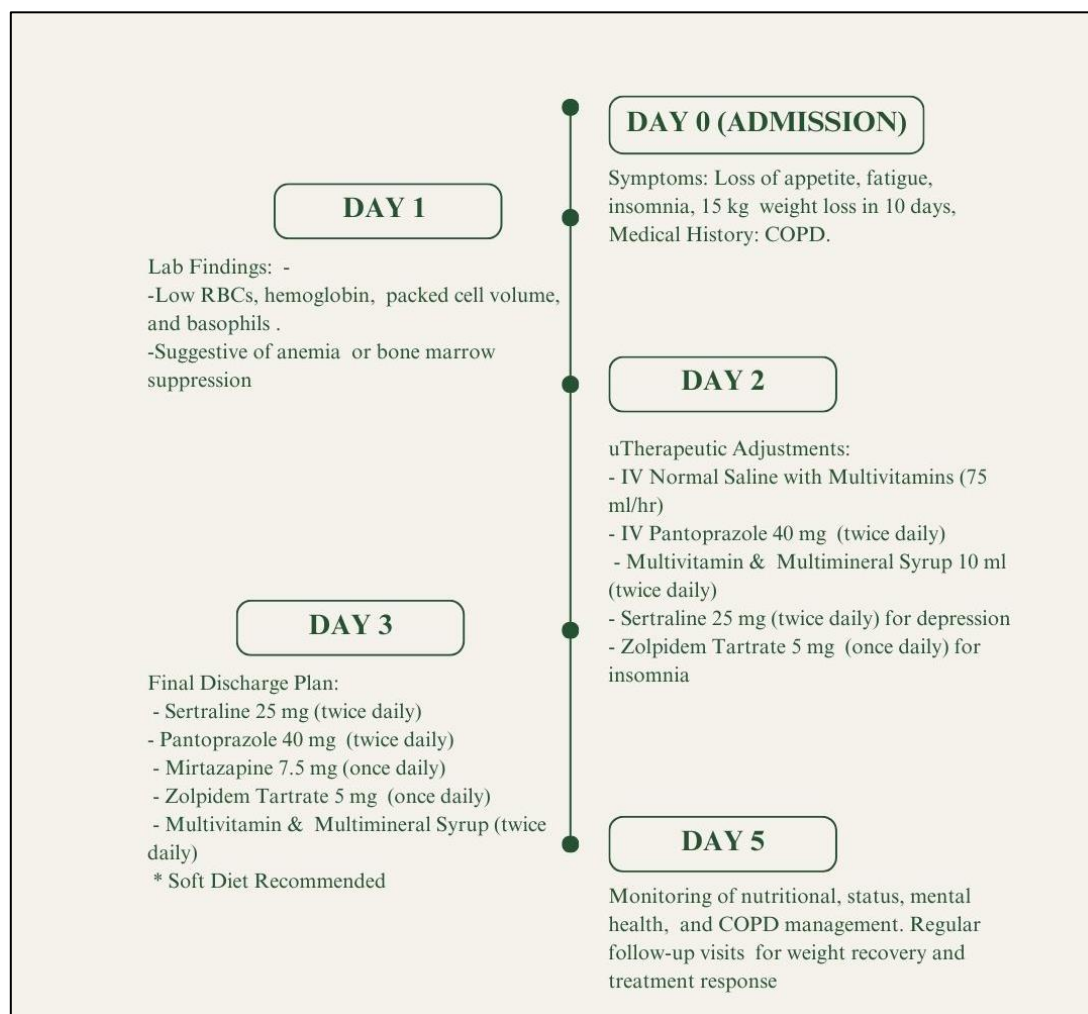
A 53-year-old female patient presented with a two-week history of loss of appetite, fatigue, and insomnia. She has a significant past medical history of chronic obstructive pulmonary disease (COPD), for which she is on regular treatment. Upon physical examination, the patient was conscious and oriented and found to be afebrile, indicating the absence of fever. At the time of admission, her vital signs revealed hypertension, as her blood pressure was elevated, and bradycardia, as her pulse rate was lower than normal. However, other important parameters, including her respiratory rate, body temperature, and oxygen saturation, were within normal limits. On the first day of admission, there was a notable improvement in her vital signs. Her blood pressure and pulse rate had normalized, and her respiratory rate, body temperature, and oxygen saturation remained stable and within the normal range. This stabilization of her vital signs is noteworthy given her recent symptoms and past medical history of COPD. The patient's conscious state and orientation suggest no immediate neurological compromise, and the absence of fever is reassuring.

Overall, her clinical presentation and subsequent stabilization indicate a need for ongoing monitoring and further evaluation to determine the underlying cause of her recent symptoms.

VITAL SIGNS	DAY 1	DAY 2
BLOOD PRESSURE	140/90	130/60
PULSE	69	70
SPO2	90%	94%
TEMPERATURE	96.5	98.6

On laboratory investigation, the patient demonstrated decreased levels of red blood cells, hemoglobin, packed cell volume, and basophils, indicating a possible underlying anemia or bone marrow suppression. She reported no symptoms of vomiting or abdominal pain but had experienced a significant weight loss of fifteen kilograms over ten days. Her past medical history includes chronic use of inhaler medications, specifically formoterol fumarate and budesonide powder, for COPD, which she has been using for approximately 35 years since childhood. The final diagnosis for this patient was weight loss under evaluation and depression. Emergency treatment included the administration of intravenous normal saline at a rate of 150 ml per hour, intravenous pantoprazole 40 mg twice a day, and oral syrup zincovit 10 ml twice a day. Therapeutic treatment adjustments included intravenous normal saline with multivitamins at 75 ml per hour, intravenous pantoprazole 40 mg twice a day, and oral multivitamin and multimineral syrup 10 ml twice a day. Additionally, she was prescribed sertraline 25 mg orally twice a day for depression, zolpidem tartrate 5 mg orally once a day for insomnia. Upon discharge, the patient was conscious, oriented, and afebrile, with stable vital signs. She was advised to follow a soft diet and prescribed a continuation of her medications, including sertraline 25 mg twice daily after meals, pantoprazole 40 mg twice daily before meals, mirtazapine 7.5 mg once daily after meals, zolpidem tartrate 5 mg once daily after meals, and a multivitamin and multimineral syrup 10 ml twice daily after meals. The comprehensive treatment plan aimed to address her nutritional deficiencies, gastrointestinal health, and mental health, ensuring a holistic approach to her recovery and long-term well-being.

Time Line



Follow Up and Outcomes:

The subjective assessment of the 53-year-old female patient revealed a complex clinical presentation marked by significant weight loss and symptoms suggestive of depression. She was admitted with complaints of loss of appetite, fatigue, and sleep disturbance persisting for 15 days. Alarming, she reported a rapid and substantial weight loss of 15 kg within just 10 days, which, alongside her other symptoms, indicated a potential depressive disorder. Her initial treatment at an outside hospital included a CT scan of the chest, which revealed bilateral pleural effusion, further complicating her clinical picture. The patient has a longstanding history of chronic obstructive pulmonary disease (COPD) for which she has been on regular treatment with an inhaler containing formoterol fumarate and budesonide for the past 35 years. The objective assessment, conducted during the physical examination, indicated that the patient was conscious, oriented, and afebrile. However, on the day of admission, her vital signs showed elevated blood pressure (hypertension) and a decreased pulse rate (bradycardia), while other vital parameters remained within normal limits. A psychiatric evaluation provided additional insights, revealing that she had significant sleep disturbances, reduced food intake, and pronounced fatigue, yet no prior history of psychiatric illness was

noted. Consequently, the clinical findings pointed towards weight loss under evaluation and depression as primary diagnoses. Initial emergency treatment focused on stabilizing the patient's condition. Normal saline with multivitamins was administered intravenously at a rate of 75 ml per hour to address her nutritional deficiencies and support overall hydration. Intravenous pantoprazole, a proton pump inhibitor, was given to decrease gastric acid secretion and manage potential gastrointestinal complications. Additionally, a multivitamin and multimineral syrup was prescribed to combat fatigue and loss of appetite, enhancing her nutritional status. The psychiatric management of her condition involved prescribing sertraline; an antidepressant classified under selective serotonin reuptake inhibitors (SSRIs). Sertraline functions by increasing serotonin levels in the central nervous system through inhibition of neuronal uptake of serotonin (5-HT), thereby ameliorating depressive symptoms. To address her severe sleep disturbances, zolpidem was prescribed. Zolpidem is a sedative and hypnotic drug that acts as a GABA_A receptor agonist of the imidazopyridine class, enhancing the effects of GABA in the central nervous system and promoting sleep. The patient received a comprehensive and multidisciplinary treatment regimen, encompassing psychiatric medication, antacid therapy, vitamin supplementation, and other supportive measures. This

holistic approach led to a significant improvement in her condition. Upon discharge, the patient was conscious, oriented, and afebrile, with stable vital signs. She was advised to continue a soft diet and was prescribed a regimen including sertraline 25 mg twice daily after meals, pantoprazole 40 mg twice daily before meals, mirtazapine 7.5 mg once daily after meals, zolpidem tartrate 5 mg once daily after meals, and a multivitamin and multimineral syrup 10 ml twice daily after meals. This thorough and targeted treatment plan aimed to address her immediate health concerns and support her long-term recovery and well-being.

Conclusion

In concluding a case study on inhaler budesonide and formoterol fumarate-induced depression, it's essential to provide a comprehensive overview. This involves summarizing the patient's demographics, medical history, and presenting symptoms. Detail the timeline and progression of depressive symptoms following the initiation of the inhaler. Describe the diagnostic workup conducted to exclude other potential causes of depression. Explain the interventions, such as any changes made to the patient's medication regimen, and the resulting impact on their depressive symptoms. Highlight any hypothesized mechanisms of action linking the inhaler to the onset of depression. Finally, emphasize the importance of monitoring for psychiatric side effects in patients prescribed this combination therapy.

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