Case Report

KALLMANN SYNDROME AND DEPRESSION: A CASE REPORT

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Abstract

Kallmann syndrome is a genetic condition that causes low testosterone levels and a lack of smell. It can also be linked to mood disorders such as depression. This case report describes an 18-year-old male with Kallmann syndrome who experienced low mood, fatigue, irritability, and sleep disturbances. He was receiving testosterone therapy and was started on Escitalopram and Clonazepam for depression. His symptoms initially improved, but after stopping both testosterone and antidepressants, his depression returned. Restarting Escitalopram led to symptom improvement. This case highlights the need for regular psychiatric evaluation in patients with Kallmann syndrome, as stopping treatment can lead to a relapse of depressive symptoms. Early recognition and proper management can improve patient well-being.

Keywords: Kallmann syndrome, Hypogonadotrophic Hypogonadism, Testosterone, Depression

INTRODUCTION

Kallmann syndrome is a hereditary disorder characterized by congenital hypogonadotropic hypogonadism (CHH) and hyposmia or anosmia. [1] Since the gonads and adrenal cortex are major sources of testosterone, patients with hypogonadism have low testosterone levels.[2] Affected Patients may exhibit a variety of clinical features, including involuntary upper limb mirror movements, abnormal eye movements, and hearing abnormalities.[3] Neuropsychiatric disorders, like schizophrenia and depressive symptoms, are not uncommon in such patients.[4,5] Depressive symptoms in syndromes with male hypogonadism are often attributed to the low testosterone levels.[6] The current case explores the presence of depression and its management in a young male with Kallmann syndrome.

CASE REPORT

An 18-year-old male with Kallmann syndrome was referred to the Psychiatry department. He was receiving testosterone injections from the Department of Endocrinology. He presented with a 3-year history of low mood, lack of interest in interaction with family members and friends, irritability, fatigue, death wishes, and reduced sleep. He also reported multiple episodes of palpitations and chest discomfort, which would last for a few minutes and resolve on their own. Mental status examination revealed depressive cognitions, death wishes, and a depressed mood. On physical examination, the patient had obesity and absent secondary sexual characteristics. He was started on Escitalopram at a dose of 5 mg along with Clonazepam 0.5 mg. Concurrently, he continued to receive testosterone injections from the Endocrinology department.

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His initial testosterone levels were low, with normal FSH and LH. Other blood investigations were within normal limits, including random blood sugar (RBS), complete blood count, thyroid function test, and liver function test. An MRI of the brain showed a smaller pituitary gland volume for his age. Subsequently, his endocrinologist discontinued the testosterone injections as his testicular volume had improved. Around the same time, the patient discontinued Escitalopram and Clonazepam on his own. Approximately one month after discontinuing both medications, his symptoms reappeared with increased intensity, and he presented to the psychiatry outpatient department with low mood, fatigue, and reduced sleep. He was restarted on Escitalopram at a dose of 5 mg because of a good response to the drug previously.

DISCUSSION

Kallmann syndrome is characterized by the presence of hypogonadotropic hypogonadism and anosmia, often accompanied by olfactory bulb hypoplasia.[7] This syndrome is frequently associated with kidney, ear, eye, and heart defects.[8] There is a complex relationship between male hypogonadism and mood dysregulation, with low levels of testosterone often correlated with depressive symptoms.[9]

Delayed or absent secondary sexual characteristics can lead to body image issues and low self-esteem. Social withdrawal and perceived inferiority, particularly during adolescence—a time when identity and peer comparison are crucial—may intensify depressive symptoms. Sexual dysfunction or lack of sexual development can contribute to feelings of inadequacy and difficulties in interpersonal relationships.[10]

Similarly, Kallmann syndrome is linked to various neuropsychiatric symptoms.[7] Steroid replacement therapy, particularly testosterone, is the primary treatment of Kallmann syndrome.[8] Testosterone functions similarly to an antidepressant and has been used in treatment-resistant depression, especially in patients with low testosterone levels. It has the capacity to enhance mood and alleviate anxiety.[9] Testosterone can reduce anhedonia due to its ability to boost dopamine in the mesolimbic pathway.[9] Its withdrawal is often connected with depressive symptoms, including severe suicidal ideation, due to testosterone-induced suppression of the hypothalamic-pituitary-gonadal axis.[11]

While biological factors such as testosterone deficiency—affecting mesolimbic dopaminergic pathways—form the core of understanding depression in Kallmann syndrome, psychological contributors are equally important. Individuals with delayed or absent secondary sexual characteristics often experience substantial body image concerns and diminished self-esteem, particularly during adolescence, a critical period for identity formation and peer comparison.

The psychosocial consequences of appearing physically immature can foster feelings of inadequacy, shame, and social withdrawal. Furthermore, the absence of typical sexual development and functioning may hinder the formation of intimate relationships, leading to interpersonal difficulties and a sense of isolation. Hofmann et al. analyzed subjective reports of women living with Kallman syndrome and highlighted ongoing struggles with identity, self-worth, and social participation, underscoring the emotional burden of the condition. [5] Similarly, Dwyer emphasized that delayed or absent puberty can lead to chronic psychological distress, including internalized stigma, low confidence, and difficulties in sexual and relational domains[10].

Recognizing these psychosocial dimensions is crucial for adopting a comprehensive biopsychosocial approach to managing depression in individuals with Kallmann syndrome.

In this case, the patient's depressive symptoms reappeared shortly after discontinuing both SSRI and testosterone. This suggests that the relapse could be primarily due to the discontinuation of SSRIs, although testosterone withdrawal might also have been a contributing factor. The reemergence of depressive symptoms highlights the importance of monitoring and maintaining psychiatric treatment in patients with hypogonadism. It is essential to look for psychiatric manifestations in patients presenting with hypogonadism.

Early identification and comprehensive management of these symptoms are crucial to improving overall quality of life and treatment outcomes.

This case underlines the need for clinicians to be vigilant for psychiatric manifestations in patients with endocrine disorders, particularly in rare conditions like Kallmann syndrome. The presence of depressive symptoms in such patients is likely the result of an interaction between hormonal dysregulation and psychosocial stressors. Treatment discontinuation-whether hormonal or psychiatric-requires close follow-up and psychoeducation to prevent relapse.

From an academic perspective, this case adds to the limited literature on psychiatric comorbidities in Kallmann syndrome and advocates for integrated care involving psychiatry and endocrinology. For clinicians, it highlights the need for early psychiatric screening, holistic assessment, and patient psychoeducation about adherence and mental health monitoring.

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