

Case Report

Sickness Behavior and Seasonal Affective Disorder: An Immunological Perspective of Depression

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ABSTRACT

We describe a case of 45-year-old female suffering from chronic hepatitis B and bronchial asthma who presented with symptoms of seasonal affective disorder and sickness behavior. The case report illustrates syndromal and sub syndromal presentations of depression such as sickness behavior in support of “malaise theory of depression” from psychoneuroimmunological perspective. The current case depicts the complex interplay of inflammatory physical illness, medication and manifestations of depression in an individual case. Thus, the physicians and psychiatrists must be vigilant regarding the psychiatric manifestations of physical illness with immune-inflammatory component.

Key words: *Bronchial asthma, chronic hepatitis B, seasonal affective disorder, sickness behavior*

INTRODUCTION

Depression is one of the leading causes of morbidity associated with medical illnesses. A World Health Survey showed that prevalence of depression in chronic physical illness ranged from 9% to 23%.^[1] The existing literature supports a bidirectional relationship between depression and immune-inflammation. Depression has been described both as comorbidity and as a complication in medical illnesses with an inflammatory component. Concurrently, increased proinflammatory cytokines have been described in depression. Immunomodulators have been found to cause depression. Thus, evidence has gradually accumulated for an immunological model of depression.^[2-4] Specifically, there has been a growing interest in the immunological basis of depression in


cases of chronic inflammatory conditions such as asthma and hepatitis.^[5-7]

An immunological model of depression that is gaining research attention is one of “sickness behavior.”^[8] In rodent models of “sickness behavior,” lipopolysaccharide has been found to increase inflammatory cytokine levels with associated changes in catecholamines and serotonin. Sickness behavior has been described in patients suffering from inflammatory physical conditions or receiving interferon, presenting clinically as fatigue, increased pain perception, decreased activity, appetite, and affective changes.^[9,10] The three-way association between inflammation, depression and sickness behavior is poorly understood. With this

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background, we describe a patient suffering from hepatitis B to asthma who presented with seasonal affective disorder (SAD) and associated sickness behavior which might interest physicians and psychiatrists for conceptualizing the current case from the psychoneuroimmunological perspective.

CASE REPORT

A 45-year-old housewife hailing from rural Puducherry, South India was referred to psychiatry from the department of gastroenterology with complaints of diffuse body ache and burning sensation for 6 months. This was accompanied by persistent low mood, anhedonia, sleep disturbance, and ideas of worthlessness and hopelessness for 3 months. She had already received consultation from the department of orthopedics and immunology for the somatic symptoms where she underwent investigations including hemogram, sugar, auto antibody profiling (nucleosomes, histones, SS-A, Sm, u1-Nrnp/Sm, Rho 52, SS-B, Scl-70, PMScl1, Jo-1, CENP-B, PCNA, ds-DNA, Rib-P protein, and AMA M2), renal, liver, and thyroid function test, all of which were unremarkable. She had been diagnosed with chronic hepatitis B infection 15 years back, on treatment with tenofovir disoproxil fumarate and bronchial asthma for the past 3 years, on treatment with beclomethasone dipropionate. The patient had a history of episodes characterized by low mood, fatigability, anhedonia, suicidal ideations, and sleep disturbance lasting for around 3–4 months during the winter season which resolved with the onset of summer. These episodes were recurring yearly for past 3 years with consistent onset between October and December and offset between February and April when winter would recede. The patient reported that onset of these episodes almost always coincided with exacerbations of bronchial asthma. After a detailed psychiatric evaluation, as per Diagnostic and Statistical Manual of Mental Disorders-5, a diagnosis of major depressive disorder, recurrent with seasonal pattern was made. The score on Hamilton Depression Rating Scale (HDRS) was 18. She was started on amitriptyline 25 mg/day which was uptitrated to 50 mg/day in 3 weeks duration, and the patient had significant improvement with HDRS score of 7. At present, the patient is euthymic at 3 months of follow-up.

DISCUSSION

Majority of cases of SAD have been reported from temperate climate, and there are few cases reported from tropical climates such as India. The case reports existing in literature are from North India where depression has been noted to occur commonly in summer compared to

winter.^[11] We find merit in reporting the current case mainly due to three reasons. First, it is a case of SAD from South India presenting with winter depression which makes it a rare entity. This could be possibly due to the ratio of winter to summer depressions increasing with latitude^[12] and Puducherry being placed at a lower latitude of 11.9139° N compared to North India which lies along latitude of 27° N–29° N.

Second, another interesting aspect of the case was the temporal association of onset of depression with bronchial asthma and reoccurrence of episodes of depression with exacerbations of bronchial asthma. This might point toward a link between bronchial asthma and SAD which makes a case for investigating the inflammatory basis of SAD in future longitudinal studies.

Third, the presence of initial somatic symptoms suggestive of sickness behavior followed by occurrence of syndromal depression in seasonal pattern with exacerbation of bronchial asthma depicts the sickness behavior gradually developing into syndromal depression which is now being considered as a severe form of maladaptive sickness behavior. This partly supports the concept of “malaise model of depression” which postulates that major depressive disorder is inappropriate sickness behavior caused by derangements in cytokine levels and antidepressants act on dysphoric emotion of malaise.^[13] Although sickness behavior and depression share similarities in terms of clinical presentation, sickness behavior is understood as reversible adaptive response to infection to pathogens and depression is being considered as maladaptive sickness behavior which occurs in vulnerable individuals.^[14] It is worth describing here that tenofovir disoproxil fumarate has also been found to cause depression.^[15] Hence, the case portrays the complex interplay of inflammatory physical illnesses and tenofovir disoproxil fumarate in contributing to SAD and sickness behavior. Further, the patient had responded to a low dose of 3 weeks of amitriptyline. Hence, the dose required for response in such subset of patients might merit exploration in future studies.

The current case emphasizes the need for screening for depression in chronic inflammatory conditions to uncover syndromal as well as sub syndromal presentations of depression such as sickness behavior especially among female sufferers. Furthermore, the case demonstrates the need for physicians to be vigilant about sickness behavior and depression in patients with hepatitis B who are not receiving interferon as much of the published literature is from reports of patients with hepatitis C receiving interferon.^[16,17] Better awareness of the predilection for developing depression in

chronic medical conditions with an inflammatory basis would reduce redundant consultations, investigations and facilitate prompt referrals to psychiatry. Hence, psychiatric presentations of chronic inflammatory conditions deserve special emphasis during medical training to ensure timely identification, referral and prompt management to hasten the recovery of such patients.

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Conflicts of interest

There are no conflicts of interest.

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