

Original article / Araştırma**Comparison of sociodemographic and clinical characteristics of bipolar patients with and without seasonal patterns**

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ABSTRACT

Objective: Bipolar disorder (BD) affects 1-4% of the population worldwide and presents with seasonal patterns with an incidence of 20-30%. Limited studies exist on seasonality, its relation to sociodemographic and clinical characteristics, and effects on treatment in BD in Turkey. **Methods:** This retrospective study included 174 patients with a major diagnosis of BD according to the DSM-IV. Comorbidities were determined using the SCID-I. The study was conducted using a semi-structured interview schedule and a mood monitoring chart. The patients were divided into two groups, those with and those without seasonal patterns, and their sociodemographic and clinical characteristics were compared. **Results:** We found that 36.2% of patients with BD had seasonal patterns. Regardless of type, first episodes were significantly more frequent in the nonseasonal group. With respect to first-episode types, the manic type was significantly more frequent in the seasonal group and the depressive type in the nonseasonal group. The number of patients with a comorbid anxiety disorder (NOS) or dysthymia was significantly higher in the seasonal group and the hospitalized nonseasonal group. The rate of response to lithium monotherapy, mean duration of the disease, mean total number of episodes, and mean total number of mixed episodes were significantly higher in the seasonal group. **Conclusion:** The rate of dysthymia was significantly higher in the seasonal group, suggesting that those with seasonality have more depressive aspects. These results indicate that the prognosis for seasonal bipolar patients is poorer than for nonseasonal patients. Another important finding was the presence of a correlation between seasonality and a positive response to lithium protection. It has been established that the first episode of the disorder was manifested in the seasonal pattern. The first episode of BD is known to often develop as a depressive episode. These results suggest that it may be a predictor of seasonality. (*Anatolian Journal of Psychiatry* 2017; 18(6):571-576)

Keywords: Bipolar disorder, seasonality, sociodemographic characteristics, clinical characteristics

Bipolar bozuklukta mevsimselliği olan ve olmayan hastaların sosyodemografik ve klinik özelliklerinin karşılaştırılması**ÖZET**

Amaç: Bipolar bozukluk (BB), çoklu etiyolojiye sahip, dünya genelinde nüfusun %1-4'ünü etkileyen, %20-30 oranında mevsimsel gidiş gösterebilen psikiyatrik bir bozukluktur. Türkiye'de BB'de mevsimsel gidişin sıklığını, sosyodemografik ve klinik özelliklerle ilişkisini ve tedaviye etkilerini değerlendiren çalışma sayısı azdır. **Yöntem:** Çalışmaya, DSM-IV'e göre BB tanısı konmuş, iyilik dönemindeki 174 hasta alınmıştır. Eşlik eden psikiyatrik tanıları SCID-I ile belirlenmiştir. Çalışmamız, 'duygudurum izleme grafiği' ve sosyodemografik ve klinik özellikleri değerlendiren yarı

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yapılandırılmış görüşme çizelgesi doldurularak geriye dönük olarak yapılmıştır. Mevsimsellik, hastanın tüm dönemlerinin en az %75'inin aynı dönem tipi için aynı mevsimde ortaya çıkması olarak tanımlanmıştır. Hastalar, mevsimsel gidiş özelliği olanlar ve olmayanlar olarak iki gruba ayrılmıştır. **Bulgular:** Çalışmaya alınan hastaların %36.2'sinin mevsimsel özellik gösterdiği saptanmıştır. İlk dönem tip ayırt etmeden incelendiğinde, mevsimsellik göstermeyen grupta anlamlı düzeyde daha sık olduğu, ilk dönem tipi karşılaştırıldığında manik tipin mevsimsellik gösteren grupta, depresif tipin ise mevsimselliği olmayan grupta anlamlı düzeyde daha sık olduğu gözlenmiştir. Ayrıca ek tanısı başka türlü adlandırılmayan anksiyete bozukluğu ve distimi olanların, mevsimsellik gösteren grupta, hastanede yatmış olanların ise mevsimsellik göstermeyen grupta anlamlı düzeyde yüksek olduğu saptanmıştır. Lityum monoterapisine yanıt oranı, ortalama hastalık süresi, toplam geçirilmiş dönem sayısı ortalaması ve toplam karma dönem sayısı ortalaması, mevsimsellik gösteren grupta anlamlı düzeyde yüksek bulunmuştur. **Sonuç:** Ortalama hastalık süresi, toplam geçirilmiş dönem sayısı ortalaması ve toplam karma dönem sayısı ortalaması, mevsimselliği olan grupta anlamlı düzeyde yüksek bulunmuştur. Eksen-I ek tanılarından distimi oranı mevsimsel gidiş özelliği olan grupta anlamlı düzeyde daha yüksek saptanmıştır. Bu bulgu mevsimsel özellikli olanların depresif özelliklerinin daha fazla olduğunu göstermektedir. Tüm bu bulgular bize mevsimsel özellikli hastaların prognozlarının daha kötü olduğunu göstermektedir. Diğer bulgu, mevsimsellik ile lityum korumasına olumlu yanıtın ilişkili olduğudur. Mevsimsel özelliği olan grubun ilk dönemde görülmesi, mevsimsel özelliği olmayan gruba göre anlamlı bulunmuştur. BB'nin ilk olarak sıklıkla depresif dönem şeklinde olarak başladığı bilinmektedir. Bu bulguların mevsimsellik için ön belirteç olabileceğini düşündürmektedir. (*Anadolu Psikiyatri Derg* 2017; 18(6):571-576)

Anahtar sözcükler: Bipolar bozukluk, mevsimsellik, sosyodemografik özellikler

INTRODUCTION

Seasonal variations are known to have some mental effects. In studies conducted in our country, around 30% of the normal population has been found to be affected by seasonal changes.¹ Approximately 40% of patients presenting to primary care institutions for various reasons have been reported to experience seasonal mental changes.²

Seasonal patterns exist in mood disorders more frequently than in other psychiatric disorders. It has been reported that seasonal patterns may occur at a rate of 20-30%, particularly in bipolar patients (3). Although it is still not clear which episode type is more closely associated with which season, it has been reported that depressive episodes are more likely to occur between September and January, manic episodes between March and June, and mixed episodes between May and June, with hypomania showing a similar seasonal pattern to mania.^{4,5}

It has been determined that seasonal variation in admission for manic episodes is associated with evaporation and temperature.⁶ In another study, daily maximum temperature was the only meteorological variable to predict clinically relevant mood change; this suggests that increases in temperature are associated with higher odds of a transition into manic mood states.⁷ However, there are no significant results showing that environmental factors such as exposure to daylight are associated with seasonal patterns.⁸ It has also been reported that patients with bipolar depression can heal more quickly in rooms receiving more sunlight.⁹ Some studies have also

reported that seasonal patterns are seen more often in the bipolar II subtype and women, and the dominant episodes and first episodes of these patients are more likely to be of a depressive type.^{3,10,11} Seasonal patterns are thought to be associated with some genetic factors.¹²

There is a limited number of studies in our country on the prevalence of seasonal patterns in bipolar disorder (BD), its association with sociodemographic and clinical characteristics, and its effects on treatment. With this study, we aimed to address this deficiency in research, and contribute to patients through more appropriate treatments.

METHODS

Of the patients being treated in the psychiatry clinic at the Haseki Training and Research Hospital, 174 bipolar patients who were admitted for follow-up between May 2016 and December 2016 were included in the study. All patients were treated in outpatient, which constitutes our study's academic setting. The bipolar diagnosis of each patient recruited to the study was made by a psychiatrist by way of a detailed, semi-structured clinical assessment in line with the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV). A Structured Clinical Interview (SCI) for the DSM-IV (clinical version SCID-I/CV) was applied to all participants.¹³ All patients were assessed in an inter-episodic period of BD; they were euthymic when admitted to this study.

All patients were included in a BD prospective follow-up program, which also covered their

treatment schedule. Semi-structured interview charts that assessed patients' sociodemographic and clinical features (i.e., family history, presence of psychotic features, predominant episode type, number and type of episodes, ratio of episode types, total number of episodes, age of onset, number of hospitalizations, response to treatment, axis-I comorbidity, etc.) were filled out with information obtained from the patient and his/her family on admission, and previous medical records. Mood charts including graphical records for the outcome of the disorder and the outcome of treatments since the onset of the BD were filled out as well. Both charts were updated in every follow-up visit. During the follow-ups, patients and their accompanying relatives were interviewed once a month in the first six months, once every two months in the following six months, and for remitted patients, once every three months in the rest of the maintenance period. In cases of recurrence, follow-up visits were made more frequently according to the needs of the patient and prescribed treatment. Patients' life charts and all medical records were reviewed for the present study, and missing sections were completed in follow-up visits when necessary. Age of onset was the age that met DSM-IV mood episode criteria for the first time, and predominant episode type was the most frequent episode among all occurring episodes. The interviews were semi-structured, not clinical scales. Interview charts were prepared by the authors and were designed to measure socio-demographic and clinical data. Evaluation of patient files was carried out retrospectively.

The seasonal pattern indicator was marked positive when at least 75% of a patient's total episodes occurred in the same season for the same episode type. No marking was made for patients who had less than three episodes. The patients who had only three episodes were considered to have met the seasonal pattern criterion if each of their episodes indicated seasonality. Bipolar patients with less than three episodes were excluded from the study. Patients' clinical interviews, schedules, and charts were reviewed and reassessed for the study. All patients were evaluated when they were in remission according to the DSM-IV. Based on these data, the patients were divided into two groups: those with seasonal patterns and those without seasonal patterns. The groups were then compared with respect to their sociodemographic and clinical characteristics.

All participants gave a written informed consent, and approval for the study was obtained from the

local ethics committee.

Statistical analysis

The descriptive statistics of the data obtained were calculated in the form of means and standard deviations (SD); numbers and percentages were shown in tables. The differences between those with and those without seasonal patterns with respect to their categorical characteristics were compared using the Pearson's chi-square analysis. Differences with respect to numerical type of characteristics were compared using the independent samples t-test. The statistical significance level was taken as $p < 0.05$, and the PASW Statistics 18 software was used for calculations.

RESULTS

Our study included 174 patients diagnosed with BD, 63 (36.2%) of these patients had seasonal patterns. The descriptive values pertaining to the data obtained (and whether or not the differences seen between those with and those without seasonal patterns with respect to these characteristics) were significant, as shown collectively in Table 1 and Table 2. Looking at Table 1, it is clear that there was no significant difference between those with and those without seasonal patterns in terms of gender distribution, bipolar subtype distribution, axis-I comorbidity (i.e., alcohol, substance dependence (ASD), panic disorder (PD), social anxiety disorder (SAD), specific phobia (SP), obsessive compulsive disorder (OCD), generalized anxiety disorder (GAD), anxiety disorder not otherwise specified (AnxNOS), somatoform disorder, or eating disorder), dominant bipolar type, dominant bipolar type frequency, psychotic symptoms, episode severity, hyperthymia, attempted suicide, family history of BD, or family history of suicide. However, when viewed regardless of type, the first episode was significantly higher (74.7%) in the group without seasonal patterns ($p = 0.005$). When the distribution of the first episode types by the groups were assessed, the manic type (67.6%) was significantly more frequent in the group with seasonal patterns and the depressive type (56.6%) in the group without seasonal patterns ($p = 0.017$). There were not any significant findings between the two groups with respect to lifelong axis-I comorbidity. Of the current axis-I comorbidities, AnxNOS (6.3%) was significantly higher in the group with seasonal patterns ($p = 0.039$). Again, the ratio of those with dysthymia was significantly higher in the group with seasonal patterns ($p = 0.0001$).

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Additionally, the ratio of those hospitalized turned out to be significantly higher (80%) in the group without seasonal patterns ($p=0.016$). The ratio of those responding to lithium monotherapy was significantly higher (73.1%) in the group with seasonal patterns ($p=0.008$).

Comparisons were made between those with and those without seasonal patterns with respect to the numerical characteristics measured in the study; the results were summarized in Table 2. As seen in the table, there was no significant difference between those with and those without seasonal patterns with respect to mean age, mean age at disease onset, mean episode interval, number of manic episodes, number of hypomanic episodes, number of depressive episodes, and number of hospitalizations. However, the mean duration of the disease ($p=0.022$), the mean number of total episodes ($p=0.041$), and the mean number of total mixed episodes ($p=0.045$) were significantly higher in the group with seasonal patterns.

DISCUSSION

Since two groups were compared sociodemographically, the mean duration of the disease (20.0 ± 9.9 years), the mean number of total episodes (11.6 ± 8.9), and the mean number of total mixed episodes (1.2 ± 2.6) were significantly higher in the group with seasonal patterns. Similar to our study, another study also found that the total number of episodes was higher in bipolar patients with seasonal patterns.^{3,11}

In our study, there was no difference in dominant bipolar type between those with and those without seasonal patterns. Although the data suggest that rates of seasonal patterns in BD II were much higher than in BD-I.¹⁰

All of these results are important for the prognosis of BD.^{14,15} Hochman et al. suggested that bipolar patients with seasonal patterns have a more severe form of the disorder due to the association of psychotic features.¹⁵ These results in our study being significantly different in the group with seasonal patterns seems to be the factor adversely affecting the prognosis.

With respect to axis-I comorbidity, the rate of dysthymia (8%) was significantly higher in the group with seasonal patterns. This result suggests that those with seasonal patterns exhibit more depressive characteristics. The presence of long periods of depression in BD is known to indicate poor prognosis.¹⁴ In our study, no other axis-I comorbidity was determined to be signifi-

cant, despite eating disorders being determined significant in another study.³

These results show us that bipolar patients with seasonal patterns have poorer prognoses than bipolar patients without seasonal patterns.¹⁴⁻¹⁹ However, seasonality is not among the prognostic indicators of BD.

The DSM-IV uses the seasonal pattern indicator only for depressive episodes. According to the DSM-V, at least one episode (mania, hypomania, or depression) should show a seasonal pattern. When this is the case, we should exclude many patients whose dominant episode type is manic or mixed, but whose depressive episodes remain limited in number, and even exclude patients with unipolar mania. Some authors argue that this is a restrictive presumption and seasonality indicators should be broadened to include manic and mixed episodes.¹¹ In one study, seasonal patterns were found in equal numbers for both manic episodes and depressive episodes, while another study showed seasonality frequently occurs in manic episodes in males and depressive episodes in females; in other words, seasonality was impressed by gender.^{4,15,20} Furthermore, Kim et al. suggested that in BD II, seasonal patterns were associated with female gender.¹⁰ In our study, gender was not determined to be statistically significant with or without seasonal patterns in BD. Since we evaluated other episodes alongside depressive episodes in relation to seasonal patterns, this may have increased our rates of seasonality compared to other studies.

Seasonal patterns have been linked to depressive episodes to a large extent and to manic episodes to a smaller extent. Very few studies have also reported that mixed episodes may show a seasonal pattern as well.⁸ Looking at which episode type occurred in what proportion (by percentage) in each patient in our study, we see that there were significantly more mixed episodes in patients with seasonal patterns, and the number of mixed episodes tended to be larger. Although no separate recording of seasonal pattern by episode type was attempted, these results suggest that mixed episodes may also be associated with seasonality.

Another important result of our study was the presence of a correlation between seasonal patterns and a positive response to lithium protection. A review assessing the predictors of response to lithium protection reported that a correlation was found between seasonality and a positive response to lithium in only one stu-²

dy.^{21,22}

It has been established that first episodes of BD were present without seasonal patterns in our study. When these first episodes were compared by their types, the manic type was significantly more frequent in the group with seasonal patterns, and the depressive type was significantly more frequent in the group without seasonal patterns. The first episode of BD is known to often start as a depressive episode (23). These findings beg the question about whether they can be seen as predictors for seasonality. However, it was reported in another study that the dominant episode and first episode types of these patients were more often depressive.¹¹ We think further studies are needed on this subject.

One of the limitations of our study was that it was retrospective. Data obtained from patients retrospectively may present conflicts. When assessing our patients retrospectively, we attempted to mitigate any potential conflict by checking the information received from the

patients with the information obtained from their relatives, and by using only medical records. We also tried to minimize possible retrospective limitation effects by frequently updating the data as most of the patients had been followed up on for a long time by our unit.

Although broadening the DSM-IV criteria to cover episodes other than depressive episodes could be considered a limitation as it involves exceeding generally accepted standards, including all episodes could also be an advantage for ruling out the presumption discussed above.

Determining the magnitudes of seasonal patterns and using tools such as the Seasonal Pattern Assessment Scale to that end may be appropriate in raising awareness. These tools are reported to be useful in identifying seasonal mood fluctuations in bipolar patients, but remain limited in establishing a correlation between diagnostic sources and seasonal pattern criteria.²⁴

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