ARAŞTIRMA MAKALESİ / *RESEARCH ARTICLE*

Clinical and Demographic Characteristics of Uveitis Patients: Eastern Black Sea Region Sample

Üveit Hastalarının Klinik ve Demografik Özellikleri: Doğu Karadeniz Bölgesi Örneği

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ABSTRACT

Aim: *Uveitis is one of the leading causes of visual impairment worldwide. This study aims to delineate the demographic and clinical characteristics of uveitis patients who underwent treatment and monitoring at our facility.*

Material and Methods: *A retrospective examination was conducted on the medical records of uveitis patients monitored at the Uvea-Behçet Unit of Karadeniz Technical University Faculty of Medicine Farabi Hospital between 1997 and 2020. Four hundred and fifty uveitis patients, whose records comprehensively met the study criteria, were evaluated for analysis.*

Results: *Females constituted 56.2% (n=253) while males represented 43.8% (n=197) of the study group. Patients exhibited a mean age of 35.85±16.79 years. The predominant clinical presentation was a decline in visual acuity reported by 84.9% (n=382) of the patients. Idiopathic uveitis emerged as the most prevalent subtype accounting for 23.5% (n=106) of cases. Topical steroids were the primary treatment administered to 78.4% (n=353) of the study group. Six hundred eleven of a total of 900 eyes were involved. Anatomically, anterior uveitis was the most common form in all eyes, with 38.7% (n=349). Of the eyes with involvement, 59.1% (n=367) fully recovered, while 38.5% (n=239) experienced symptom management with ongoing treatment, and 2.4% (n=15) of patients were non-responsive to treatment.*

Conclusion: *The prevalence, subtype distribution, and clinical manifestations of uveitis can exhibit regional variations. This study demonstrates the demographic and clinical characteristics of uveitis patients in the Eastern Black Sea Region.*

Key words: *uveitis; uveal diseases; uveitis therapy; uveitis complications*

ÖZET

Amaç: *Üveit, küresel ölçekte görme bozukluklarının başlıca etkenlerinden biridir. Bu çalışmada, kurumumuzda tedavi ve izlem süreçlerine tabi tutulan üveit hastalarının demografik ve klinik özelliklerinin ayrıntılı bir şekilde çıkarımını yapmayı amaçladık.*

Materyal ve Metot: *Karadeniz Teknik Üniversitesi Tıp Fakültesi Farabi Hastanesi Üvea-Behçet Ünitesi'nde izlenen üveit hastalarının tıbbi kayıtları üzerinden retrospektif bir değerlendirme gerçekleştirildi. 1997 ile 2020 yılları arasında, çalışma kriterlerini eksiksiz olarak sağlayan 450 üveit hastası analiz için ele alındı.*

Bulgular: *Çalışma grubunda kadınlar %56,2 (n=253) oranında iken, erkekler %43,8 (n=197) oranında temsil edilmekteydi. Hastaların ortalama yaşı 35,85±16,79 yıl olarak belirlendi. En yaygın klinik sunum, hastaların %84,9'u (n=382) tarafından bildirilen görme keskinliğindeki azalmaydı. İdiyopatik uveit, vakaların %23,5'ini (n=106) oluşturarak en yaygın alt tip olarak ortaya çıktı. Çalışma grubunun %78,4'üne (n=353) başlıca tedavi olarak topikal steroidler uygulandı. Tüm gözlerin (n=900) 611'inde tutulum mevcut idi. Tüm gözler incelendiğinde, %38,7 oranla (n=349) anatomik olarak en yaygın form anterior üveit idi. Tutulum izlenen gözlerin %59,1'i (n=367) tamamen iyileşirken, %38,5'i (n=239) devam eden tedavi ile semptom yönetimi yaşadı ve gözlerin %2,4'ü (n=15) tedaviye yanıt vermedi.*

Sonuç: *Üveitin prevalansı, alt tip dağılımı ve klinik gösterimleri coğrafi bölgelere göre değişiklik gösterebilir. Bu çalışma, Doğu Karadeniz Bölgesi'ndeki üveit hastalarının demografik ve klinik özelliklerini sunmaktadır.*

Anahtar kelimeler: *üveit; uveal hastalıklar; üveit tedavisi; üveit komplikasyonları*

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Introduction

Uveitis denotes an inflammatory condition that predominantly affects the uveal layer of the eye, encompassing the iris, ciliary body, and choroid. This inflammation can also extend to adjacent ocular structures such as the vitreous, retina, vessels, and optic nerve[1]. Recognized as a significant contributor to ocular morbidity, the diverse manifestations of uveitis often pose challenges in accurate diagnosis. A comprehensive diagnosis is typically achieved through a synthesis of detailed anamnesis and meticulous clinical examination, emphasizing ocular symptoms, onset patterns, historical data on previous episodes, familial and social backgrounds, and an exhaustive systemic investigation. Nevertheless, a subset of patients experience delayed diagnosis or suboptimal therapeutic interventions. Consequently, it is estimated that nearly one-third of uveitis-afflicted individuals might have vision impairment, escalating to potential blindness[2,3]. Globally, uveitis accounts for an estimated 5% to 10% of vision loss cases[4].

From a public health perspective, uveitis predominantly impacts the economically active demographic, underscoring its societal implications. Effective management of uveitis not only facilitates the continuation of professional endeavours but also ensures an individual's holistic integration into societal and social frameworks.

Uveitis can be dichotomized into infectious and non-infectious categories, with the latter being predominantly autoimmune or immune-mediated. Notably, non-infectious variants constitute the majority of uveitis presentations[5]. A myriad of factors, including age, gender, ethnicity, geographical distribution, environmental exposures, genetic predispositions, and sociocultural practices, influence the prevalence and clinical presentation of uveitis.

The primary objective of our research is to undertake a holistic evaluation of uveitis patients presenting to our clinic in Trabzon, which caters to a vast demographic, predominantly from the Black Sea Region and its adjoining provinces. By delineating the sociodemographic profiles of these patients, systematically analyzing their therapeutic regimens, comparing treatment outcomes, and assessing long-term prognostic indicators, we aim to derive insights that could potentially guide clinical practice. The exigency of such a study is palpable in the current clinical landscape.

Materials and methods

Study Design and Population

This study employed a cross-sectional descriptive design. The target population comprised uveitis patients who received care at the Ophthalmology Uvea and Behçet Unit of the Karadeniz Technical University Faculty of Medicine Farabi Hospital, spanning the period from 1997 to 2020.

Inclusion and Exclusion Criteria

Eligibility for inclusion in the study was determined based on the comprehensiveness and availability of patient medical records. Specifically, uveitis patients with well-maintained medical files that sufficiently addressed the data parameters of this study were considered. Conversely, patients with incomplete or inconsistent data and those whose records were inaccessible from the hospital archives for any reason were excluded. Based on these criteria, a total of 450 patients with comprehensive medical records were incorporated into the study.

Ethical Considerations

Before the commencement of the study, Ethical approval was obtained from the Ethics Committee of the Karadeniz Technical University Faculty of Medicine, with the approval dated 31.12.2018 and bearing reference number 2018/310.

Data Analysis

The collected data, encompassing nominal, ordinal, and numerical types, were inputted and analyzed using the Statistical Package for Social Sciences (SPSS) program version 18 software (IBM Inc., Chicago, IL, USA). Descriptive statistics were employed for data interpretation. Quantitative data were expressed as mean ± standard deviation. The one-sample Kolmogorov-Smirnov test was utilized to assess the normality of the distribution of these data.

A p-value of less than 0.05 was considered indicative of statistical significance.

Results

Demographics and Clinical Presentation

From 1997 to 2020, 450 uveitis patients presented to our Uvea-Behçet unit and were subsequently included in this study. Notably, 71.1% (n=320) of these patients sought consultation at our clinic without prior treatment. The cohort comprised 253 females (56.2%) and

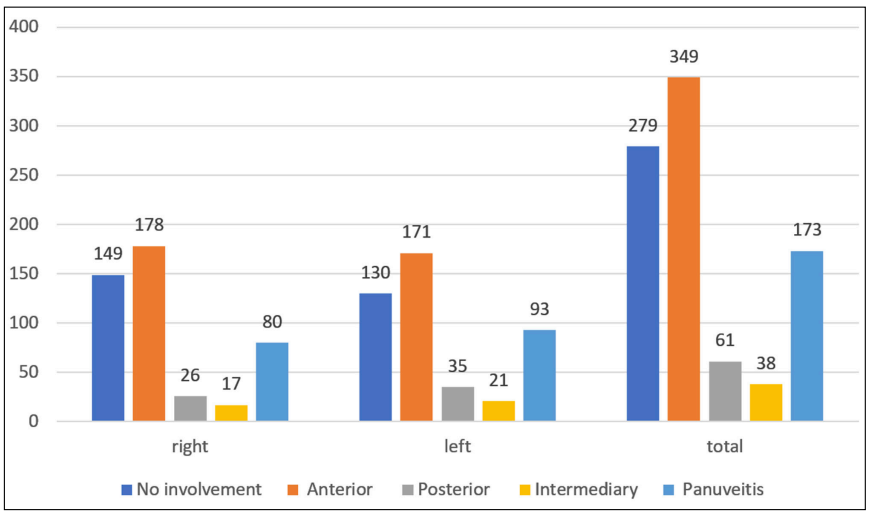

Figure 1. *Anatomical classification of uveitis in right, left, and total eyes.*

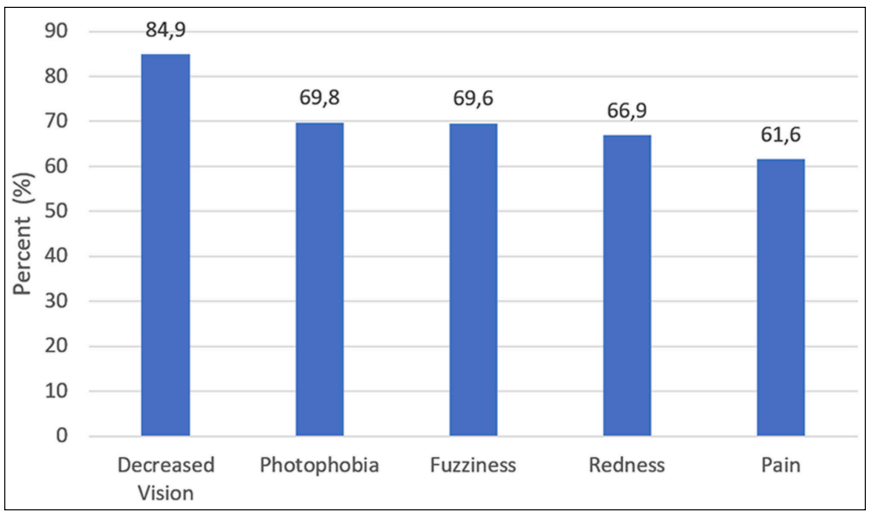

Figure 2. *Distribution of admission complaints in patients with uveitis.*

197 males (43.8%). The patients had a mean age of 35.85±16.79 years, with a range from 3 to 91 years. A total of 70 patients were under 18 years of age. The average duration of follow-up was 4.6±4.0 years (range: 0.4 – 21 years), while the mean disease duration at the time of presentation was 2.19±4.13 years (range: 0 – 40 years).

Ocular Involvement

During the observation period, bilateral eye involvement was documented in 36.2% (n=163) of the patients. Unilateral involvement was observed in 30% (n=133) for the right eye and 34% (n=154) for the left eye. Anatomical localization of inflammation showed that anterior uveitis was the most common form with 38.7%. This was followed by panuveitis at 19.2%, posterior uveitis at 6.7% and intermediate uveitis at 4.2%. This distribution was 37.8%, 22.1%, 6.4% and 7.8% in children, respectively (Fig. 1).

Etiological Distribution

The etiological breakdown of uveitis in our cohort is detailed in Table 1. Predominantly, the etiology remained idiopathic. However, among the identifiable causes, Behçet's disease and Ankylosing spondylitis emerged as the predominant contributors.

Clinical Symptoms and Examination Findings

The predominant clinical symptom reported by the patients was a decline in visual acuity, with 84.9% (n=382) of the patients citing this complaint (as illustrated in Fig. 2). Upon clinical examination during uveitis episodes, cells in the anterior chamber were the most frequently observed finding, noted in 60.3%

Table 1. *Distribution of diagnoses of patients with uveitis*

DIAGNOSIS	n	%
Idiopathic	106	23.5
Behcet's disease	92	20.4
Ankylosing spondylitis	50	11.1
Fuchs heterochromic iridocyclitis	42	9.3
Infectious parasitic (toxoplasma)	36	8
Spondyloarthropathy	23	5.1
Sarcoidosis	21	4.7
Juvenile idiopathic arthritis	20	4.4
Infectious viral, HSV	14	3.1
Infectious bacterial (Lyme)	9	2
Multiple sclerosis	7	1.6
Infectious bacterial (tuberculosis)	4	0.9
Infectious viral (CMV)	3	0.7
Inflammatory bowel disease	3	0.7
Incomplete Behcet	3	0.7
Infectious viral (VZV)	2	0.4
Vogt Koyagani Harada	2	0.4
Rheumatoid arthritis	2	0.4
Acute lymphoblastic leukemia	2	0.4
White spot syndromes (multifocal choroiditis)	2	0.4
Infectious bacterial (syphilis)	1	0.2
Psoriasis	1	0.2
Systemic lupus erythematosus	1	0.2
Sympathetic ophthalmia	1	0.2
Secondary to systemic infection	1	0.2
Gittelman syndrome	1	0.2
Paraneoplastic syndrome	1	0.2

Table 2. *Eye examination findings observed during attacks in patients with uveitis*

Findings			n*	%
Anterior chamber cell	Right	Yes	268	59.6
		No	182	40.4
	Left	Yes	275	61.1
		No	175	38.9
	Total	Yes	543	60.3
		No	357	39.7
Keratic precipitate	Right	None	206	45.8
		Non-granulomatous	239	53.1
		Granulomatous	5	1.1
	Left	None	202	44.9
		Non-granulomatous	242	53.7
		Granulomatous	6	1.3
	Total	None	408	45.3
		Non-granulomatous	481	53.4
		Granulomatous	11	1.3
Conjunctival hyperemia	Right	Yes	194	43.1
		No	256	56.9
	Left	Yes	191	42.4
		No	259	57.6
	Total	Yes	385	42.7
		No	515	57.3
Posterior synechia	Right	Yes	103	22.9
		No	347	77.1
	Left	Yes	101	22.4
		No	349	77.6
	Total	Yes	204	22.6
		No	696	81.4
Hypopyon	Total	Yes	29	6.4
		No	421	93.6
Anterior synechia	Right	Yes	8	1.8
		No	442	98.2
	Left	Yes	9	2.0
		No	441	98.0
	Total	Yes	17	1.9
		No	883	98.1

* Total eyes.

Table 3. *Treatment approaches applied during the follow-up of patients with uveitis*

Treatment	n	%
Topical steroid	353	78.4
Systemic steroid	202	44.9
Azathioprine	90	20
Periocular-intravitreal steroid	66	14.7
Colchicine	61	13.6
Adalimumab	51	11.3
Systemic antibiotic	49	10.9
Sulfasalazine	41	9.1
Cyclosporine	34	7.6
Methotrexate	34	7.6
Systemic antiviral	18	4
Infliximab	15	3.3
Interferon alpha	7	1.6
Etanercept	3	0.7
Golimumab	2	0.4

of the cases. A comprehensive breakdown of other ocular examination findings can be found in Table 2.

Therapeutic Interventions

The therapeutic modalities employed for managing uveitis throughout the observation period are delineated in Table 3.

Complications

Complications arising from uveitis were also documented. Glaucoma was observed as a sequela in 6.8% (n=62) of the patients. In terms of ocular complications across all eyes, cataract formation was noted in 3.8% (n=35), band keratopathy in 1.8% (n=17), and corneal opacity in 1.5% (n=14).

Table 4. *The relationship between the site of involvement and treatment outcome in patients with uveitis**

Involvement	Result	n	%
Anterior	Healing	247	70.7
	Treatment continues	102	29.3
	No response received	0	0
Posterior	Healing	41	67.2
	Treatment continues	20	32.8
	No response received	0	0
Intermediate	Healing	30	78.9
	Treatment continues	8	21.1
	No response received	0	0
Panuveitis	Healing	49	28.3
	Treatment continues	109	63.0
	No response received	15	8.7
Total	Healing	367	59.1
	Treatment continues	239	38.5
	No response received	15	2.4

* Eyes with different involvement sites between right and left were recorded separately.

Treatment Outcomes

The correlation between the anatomical site of uveitis and the therapeutic outcomes is elucidated in Table 4.

Discussion

Our study provides valuable insights into the epidemiology and clinical presentation of uveitis in our patient cohort, contributing to the broader understanding of this complex ocular condition. We observed notable similarities and differences while comparing our findings with global trends, particularly in demographic distributions and clinical manifestations. In our cohort, the prevalence of uveitis in females was higher than in males, contrasting with some global epidemiological data where gender distribution in uveitis is often more balanced[3,6]. However, our findings align with several domestic studies that reported a female predominance[7,8].

Uveitis often remains asymptomatic, particularly among younger individuals, with diagnoses frequently made post-complication[9]. Symptomatology can vary across age groups. For instance, while children predominantly present with blurred vision, adults often report symptoms like redness, photophobia, pain, and floaters[10]. Our study's primary presenting complaint was decreased vision, followed by photophobia, floaters, redness, and pain. These findings are consistent with Sizmaz et al., who reported blurred vision as the primary symptom in 68% of their cohort[7]. The variations in symptom percentages might be attributed to the retrospective nature of our study and potential inconsistencies arising from multiple clinicians conducting examinations.

Anatomically, anterior uveitis emerged as the most prevalent form of involvement, consistent with several studies in the literature[11,12]. Etiologically, idiopathic uveitis was predominant, followed by Behçet's disease and Ankylosing spondylitis. This distribution mirrors findings from studies by Rathinam et al. and Khairallah et al., underscoring the global prevalence of idiopathic uveitis[13,14].

Therapeutically, corticosteroids remain the cornerstone of uveitis management[15,16]. In our cohort, topical steroids were the most frequently administered treatment, followed by systemic steroids. The choice of immunosuppressants varied, with azathioprine being the most commonly prescribed in our centre, especially for Behçet's disease and steroid-resistant autoimmune uveitis[17,18].

The observed incidences of secondary glaucoma and cataract formation align with existing literature[19,20]. This concordance reinforces the established understanding of these complications as common sequelae in uveitis patients. Our data contribute to the broader narrative on the ocular risks associated with uveitis.

In our study, treatment outcomes, particularly in cases of panuveitis, were notably poor. Panuveitis demonstrates a more aggressive clinical course than other uveitis types[2]. The literature indicates that a significant proportion of panuveitis cases encounter poor visual outcomes despite aggressive treatment[21,22]. The data obtained in our study reflect this aggressive progression and the challenges in management. These findings underscore the necessity for customized treatment strategies to manage panuveitis.

Limitations

Our study's limitations include potential inconsistencies arising from multiple clinicians conducting patient evaluations and the inherent challenges of retrospective research. Despite these limitations, our study offers a comprehensive overview of uveitis, filling a gap in the literature that often lacks more holistic data on uveitis patients.

In summary, our study provides a nuanced understanding of our region's demographic and clinical profiles of uveitis patients, highlighting the distinct gender

distribution, symptomatology, anatomical involvement, etiological factors, and therapeutic approaches. The predominance of idiopathic uveitis and the therapeutic reliance on corticosteroids underscore the universality of certain aspects of uveitis management. At the same time, regional variations emphasize the importance of context-specific clinical insights. As the global medical community grapples with the challenges of uveitis, studies like ours serve as crucial reference points, facilitating evidence-based clinical decisions and guiding future research endeavours. We hope subsequent investigations will build upon our findings, fostering a more integrated and holistic understanding of uveitis across diverse populations.

References

1. Yılmaz SG. Skleritler ve üveitler. Ege Tıp Dergisi. 2021:61–9.
2. de Smet MD, Taylor SR, Bodaghi B, Miserocchi E, Murray PI, et al. Understanding uveitis: the impact of research on visual outcomes. Progress in Retinal and Eye Research. 2011;30(6):452–70.
3. Muñoz-Fernández S, Martín-Mola E. Uveitis. Best Practice & Research Clinical Rheumatology. 2006;20(3):487–505.
4. Miserocchi E, Fogliato G, Modorati G, Bandello F. Review on the worldwide epidemiology of uveitis. European Journal of Ophthalmology. 2013;23(5):705–17.
5. Thorne JE, Suhler E, Skup M, Tari S, Macaulay D, et al. Prevalence of noninfectious uveitis in the United States: a claims-based analysis. JAMA Ophthalmology. 2016;134(11):1237–45.
6. Acharya NR, Tham VM, Esterberg E, Borkar DS, Parker JV, et al. Incidence and prevalence of uveitis: results from the Pacific Ocular Inflammation Study. JAMA Ophthalmology. 2013;131(11):1405–12.
7. Sızmaz S, Akova YA, Güngör SG, Öktem Ç, Yaycıoğlu RA. Üveit olgularımızın etyolojik ve klinik özellikleri. Turkish Journal of Ophthalmology / Turk Oftalmoloji Dergisi. 2010;40(5).
8. Daylan AE. Kliniğimizde takipli üveitik glokom hastalarında medikal ve cerrahi tedavi sonuçlarımız, uzmanlık tezi: Akdeniz Üniversitesi 2018.
9. Ferrara M, Eggenschwiler L, Stephenson A, Montieth A, Nakhoul N, et al. The challenge of pediatric uveitis: tertiary referral center experience in the United States. Ocular immunology and inflammation. 2019;27(3):410–7.
10. Yalçındağ FN, Özdal PC, Özyazgan Y, Batıoğlu F, Tugal-Tutkun I, et al. Demographic and clinical characteristics of uveitis in Turkey: the first national registry report. Ocular Immunology Inflammation. 2018;26(1):17–26.
11. Tsirouki T, Dastiridou A, Symeonidis C, Tounakaki O, Brazitikou I, et al. A focus on the epidemiology of uveitis. Ocular Immunology Inflammation. 2018;26(1):2–16.
12. García-Aparicio Á, García de Yébenes MJ, Otón T, Muñoz-Fernández S. Prevalence and incidence of uveitis: a systematic review and meta-analysis. Ophthalmic Epidemiology. 2021;28(6):461–8.
13. Rathinam S, Namperumalsamy P. Global variation and pattern changes in epidemiology of uveitis. Indian Journal of Ophthalmology. 2007;55(3):173.
14. Khairallah M, Yahia SB, Ladjimi A, Messaoud R, Zaouali S, et al. Pattern of uveitis in a referral centre in Tunisia, North Africa. Eye. 2007;21(1):33–9.
15. Espinosa G, Muñoz-Fernández S, García Ruiz de Morales JM, Herreras JM, Cordero-Coma M. Treatment recommendations for non-infectious anterior uveitis. Med Clin (Barc). 2017;149(12):552. e1–e12.
16. Gamalero L, Simonini G, Ferrara G, Polizzi S, Giani T, et al. Evidence-based treatment for uveitis. Isr Med Assoc J. 2019;21(7):475–9.
17. Pacheco PA, Taylor SR, Cuchacovich MT, Diaz GV. Azathioprine in the management of autoimmune uveitis. Ocular Immunology Inflammation. 2008;16(4):161–5.
18. Mili-Boussen I, Zitouni M, Ammous I, Letaief I, Errais K, et al. Azathioprine for glucocorticoid resistant noninfectious uveitis. La Tunisie Medicale. 2015;93(3):158–63.
19. Siddique SS, Suelves AM, Baheti U, Foster CS. Glaucoma and uveitis. Survey of ophthalmology. 2013;58(1):1–10.
20. Al Rubaie K, Al Dhahri H, Al Fawaz A, Hemachandran S, Mousa A, et al. Incidence and risk factors for developing glaucoma among patients with uveitis in a university-based tertiary referral center in Riyadh, Saudi Arabia. Ocular Immunology Inflammation. 2016;24(5):571–8.
21. Dick AD, Tundia N, Sorg R, Zhao C, Chao J, et al. Risk of ocular complications in patients with noninfectious intermediate uveitis, posterior uveitis, or panuveitis. Ophthalmology. 2016;123(3):655–62.
22. Arevalo JF, Lasave AF, Gupta V, Kozak I, Al Shamsi HN, et al. Clinical characteristics and treatment of 308 panuveitis patients over 10 years: results from the KKESH uveitis survey study group. Ocular Immunology Inflammation. 2019;27(8):1296–304.