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ORIGINAL ARTICLE

# Clinical and Demographic Characteristics of Patients with Uveitis Starting Later in Life

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## ABSTRACT

*Purpose*: To evaluate uveitis cases presenting at older ages for the first time.

*Methods*: We retrospectively analyzed the clinical data related to the 90 eyes of 68 patients who presented with a first episode of uveitis at the age of ≥60 years and were seen at the Uveitis Division of the Ulucanlar Eye Hospital from 1996 to 2013.

*Results*: The location of the uveitis was anterior in 51 (75%) patients. Nine patients (13.2%) presented with panuveitis, 5 (7.3%) with posterior uveitis, and 3 (4.4%) patients with intermediate uveitis. Idiopathic uveitis in 23 (33.8%) and presumed herpetic anterior uveitis in 23 (33.8%) patients were the most common diagnoses, while other diagnostic entities accounted for 22 (32.3%) patients. The most common complications were elevation of intraocular pressure in 17.7%, cystoid macular edema (CME) in 11.1%, and corneal scar in 11.1% of eyes.

*Conclusions*: While idiopathic uveitis and presumed herpetic anterior uveitis were the most common causes, although in an endemic country, Behçet disease was not a common cause of uveitis in the elderly population.

**Keywords:** Diagnosis, epidemiology, older age, prognosis, uveitis

Uveitis commonly occurs in the 20- to 50-year-old age group.[1] However, elderly patients presenting for the first time with uveitis do not seem to be uncommon.[2–4] It is clear that some components of the integrity and function of the immune response change with age.[5] It is therefore possible that the prevalence of some causes of uveitis in elderly patients may be different from that seen in younger ages. There is limited information regarding the relative frequencies of the various clinical patterns of uveitis in this age group. Some studies have concentrated largely on malignant diseases that may mimic uveitis in the elderly.[6–8] Contrary to these previous reports, idiopathic uveitis accounts for the majority of cases in the elderly.[2–4,9–11]

The mean life expectancy continues to increase. Knowledge of these various etiologies in the elderly population is therefore important regarding diagnosis and management. It is possible that the characteristics of uveitis may vary not only with age but also with geographic and genetic factors. In this study, we evaluated the causes and clinical characteristics of uveitis in elderly patients who presented at a specialized eye hospital in Turkey.

## MATERIAL AND METHODS

We reviewed the clinical data of 68 uveitis patients aged 60 and older who had been followed at the uveitis division of Ulucanlar Eye Training and Research Hospital. Patients with irregular follow-up, exogenous endophthalmitis (postoperative or traumatic), masquerade syndrome, intraocular

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lens (IOL)-induced uveitis, drug-induced uveitis, and a history suggestive of another episode before the age of 60 years were excluded from the study. Finally, 90 eyes of 68 patients were included in the study.

A medical history was obtained from each patient. The ophthalmologic examination performed at every visit included measurement of the best-corrected Snellen visual acuity, slit-lamp biomicroscopy, tonometry, and dilated fundus examination with a 90-diopter lens. Anterior segment and fundus photography, visual field testing, fluorescein angiography, ultrasonography, and optical coherence tomography were performed when indicated. The age at onset, follow-up duration, anatomical location of the uveitis, systemic disease association, specific diagnosis, best-corrected Snellen initial and final visual acuities, uveitis-associated complications, and medical and surgical treatments were recorded for all patients. The Standardization of Uveitis Nomenclature Working Group criteria were used for reporting our clinical data.[12]

The diagnosis of older age uveitis was made or approved by a uveitis specialist (PCO) at presentation. All follow-up visits were performed by the same clinician.

All patients were screened routinely for complete blood count, sedimentation rate, liver and kidney function tests, hepatitis, and HIV serology. Depending on the clinical findings, selected patients underwent additional studies such as chest x-ray, tuberculin skin test, serum angiotensin-converting enzyme assay, human leukocyte antigen (HLA) typing, and sacroiliac joint radiography. Epstein-Barr virus, cytomegalovirus, herpes simplex virus, *Toxoplasma gondii* antibodies, and antinuclear and antineutrophil cytoplasmic antibodies were assessed when needed. Systemic disease associations were investigated by an internist, rheumatologist, or pulmonologist when required.

Patients who were HLA-B27 positive with negative radiographic tests and/or rheumatological evaluation were classified as having anterior uveitis associated with HLA-B27. The diagnosis of ankylosing spondylitis and seronegative spondyloarthropathy were made after rheumatology consultation. The diagnosis of Fuchs uveitis syndrome (FUS) was based on the clinical findings. These findings were diffuse and small to medium size keratic precipitates, chronic low-grade anterior chamber reaction, diffuse iris stromal atrophy, lack of posterior synechia, and the absence of cystoid macular edema, retinal vasculitis, snowbanks, and chorioretinal infiltrates despite the presence of vitreous cells and debris.[13] The diagnosis of herpetic uveitis was based on clinical findings such as recurrent unilateral inflammatory attacks with or without acute elevation of intraocular pressure (IOP) (>21 mmHg), pigmented or granulomatous keratic precipitates (KPs), patchy or sectorial iris atrophy with or without transillumination defects, decrease in corneal sensitivity, and a distorted pupil or spiraling of the iris when there was no corneal involvement. Aqueous humor analysis was not performed in these patients. Cytomegalovirus retinitis was diagnosed clinically and confirmed with polymerase chain reaction.

The diagnosis of Vogt-Koyanagi-Harada (VKH) disease was based on the 2001 VKH workshop's revised criteria.[14] Ocular toxoplasmosis was diagnosed clinically and confirmed by elevated IgG anti-*Toxoplasma* serology in selected cases. In 3 eyes with severe vitreous inflammation, a vitreous specimen has been obtained in order to perform a cytological evaluation.

The diagnosis of macular edema was based on clinical examination, optical coherence tomography (OCT), and/or fluorescein angiography. Cases of uveitis where a specific diagnosis could not be made were classified as idiopathic.

Glaucoma was diagnosed in the presence of pathological cupping of the optic disc and a glaucomatous visual field defect with or without an intraocular pressure (IOP) above 21 mmHg. Cases with IOP >21 mmHg without cupping or visual field defect were considered as having elevated IOP.

Surgical treatment was offered to patients who developed cataract that caused visual impairment, glaucoma unresponsive to maximum medical treatment, or posterior segment complications such as retinal detachment, vitreous hemorrhage, or dense vitreous opacities. Informed consent was obtained from all patients.

All the statistical analyses were carried out using the SPSS 15.0 statistical analysis program. Descriptive statistics and mean values were used for statistical analysis. A $p$ value $<0.05$ was considered as statistically significant.

## RESULTS

Patients presenting at an age $\geq$60 years and included in the study made up 6.3% of our total uveitis patients group. The mean age at the onset of the disease was 65.8 ± 5.8 years (range, 60–83 years) and the mean follow-up time was 27.8 ± 33.9 months (range, 3–132 months).

All patients were Turkish Caucasians. There were 37 (54.4%) female and 31 (45.5%) male patients. Accompanying systemic diseases were type-2 diabetes mellitus (DM) in 8 (11.7%) cases, hypertension and type-2 DM in 1 (1.4%) case, hypertension in 6 (8.8%) cases, chronic renal failure in 1 (1.4%) case, and myasthenia gravis in 1 (1.4%) case. Among cases with unilateral involvement, the right eye had been affected in 30 (44.1%) and the left eye in 16 (23.5%)


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TABLE 1. The specific diagnosis of patients and distribution according to ocular involvement and the mean age at onset.

| Diagnosis | No. (%) of patients | Bilateral ($n = 22$) | Unilateral ($n = 46$) | Mean age at onset, years |
|---|---|---|---|---|
| Idiopathic | 23 (33.8) | 13 (59.0%) | 10 (21.7%) | 65.4 |
| Herpetic anterior uveitis | 23 (33.8) | 1 (4.5%) | 22 (47.8%) | 67.7 |
| Fuchs uveitis | 6 (8.8) | 1 (4.5%) | 5 (10.8%) | 63.1 |
| AS | 4 (5.8) | 2 (9.1%) | 2 (4.3%) | 66.7 |
| HLA-B27-associated uveitis | 4 (5.8) | 2 (9.1%) | 2 (4.3%) | 63 |
| Toxoplasmosis | 2 (2.9) | – | 2 (4.3%) | 64 |
| Multifocal choroiditis | 2 (2.9) | 1 (4.5%) | 1 (2.1%) | 63 |
| Spondyloarhtropathy | 2 (2.9) | 1 (4.5%) | 1 (2.1%) | 60.5 |
| Vogt-Koyanagi-Harada | 1 (1.4) | 1 (4.5%) | – | 68 |
| CMV retinitis | 1 (1.4) | – | 1 (2.1%) | 73 |

AS, ankylosing spondylitis; CMV, cytomegalovirus.

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patients. Bilateral involvement was seen in 44 (48.8%) eyes of 22 (32.3%) patients.

Anterior uveitis was present in 51 (75.0%), intermediate uveitis in 3 (4.4%), posterior uveitis in 5 (7.3%), and panuveitis in 9 (13.2%) patients. Of the 51 patients with anterior uveitis, 17 (33.3%) presented with corneal involvement (keratouveitis). Vitritis was the most common finding of posterior segment involvement and was observed in 15 (22 %) patients with intermediate, posterior, and panuveitis.

Idiopathic uveitis was present in 23 (33.8%) patients. Herpetic anterior uveitis was clinically diagnosed in 23 (33.8%) patients in whom two had the cutaneous signs of herpes zoster ophthalmicus. FUS was found in 6 (8.8%) and ankylosing spondylitis in 4 (5.8%) patients. HLA-B27-associated uveitis was found in 4 (5.8%), spondyloarthropathy-associated uveitis in 2 (2.9%), toxoplasmosis in 2 (2.9%), and multifocal choroiditis in 2 (2.9%) patients while cytomegalovirus retinitis (in an immunocompromised patient) and VKH were diagnosed in 1 (1.4%) patient each. The diagnoses of the uveitis patients and their distribution according to ocular involvement and the mean age at presentation are presented in Table 1.

Elevated IOP associated with uveitis was present in 17 (18.8%) eyes of 13 (19.1%) patients. One additional patient had a history of primary open-angle glaucoma not associated with uveitis. Among these patients, 11 (84.6%) subjects had anterior uveitis, 1 (7.7%) had intermediate uveitis, and 1 (17.7%) had panuveitis. The elevated IOP was observed due to herpetic anterior uveitis in 8 (61.5%) and idiopathic uveitis in 2 (15.4%) patients, and ankylosing spondylitis, HLA-B27-associated uveitis, and Fuchs uveitis in 1 (7.7%) patient each. An active inflammation needing topical steroid treatment was observed in 9 (10.0%) of the eyes with elevated IOP, whereas the IOP was high without topical steroid treatment in 8 (8.8%) eyes. Among the other ocular complications, cataract development or progression was present in 46 (51.1%) eyes during the follow-up period. The most common anterior segment complication was corneal scar in 10 (11.1%) eyes related to presumed herpetic keratouveitis. Uveitis-associated posterior segment complications were seen in 22 (24.4%) eyes. The distribution of ocular complications is presented in Table 2.

TABLE 2. The distribution of ocular complications.

| Complications | No. (%) of eyes |
|---|---|
| Cataract | 46 (51.1) |
| Elevated IOP | 17 (18.8) |
| CME | 10 (11.1) |
| Corneal scar | 10 (11.1) |
| Vitreous condensation | 6 (6.6) |
| Macular scar | 2 (2.2) |
| Chorioretinal atrophy | 2 (2.2) |
| CNVM | 1 (1.1) |
| Retinal detachment | 1 (1.1) |

IOP, intraocular pressure; CME, cystoid macular edema; CNVM, choroidal neovascular membrane.

TABLE 3. The visual acuity levels of the 90 affected eyes at initial and final visit.

| | No. (%) of affected eyes | |
|---|---|---|
| Visual acuity | Initial visit | Final visit |
| $\leq 0.1$ | 38 (42.2) | 28 (31.1) |
| 0.2–0.5 | 28 (31.1) | 26 (28.8) |
| $\geq 0.6$ | 24 (26.6) | 36 (40.0) |

The visual acuity (VA) outcome of the affected eyes is presented in Table 3. Compared to the initial VA, the final VA improved by at least 2 lines of Snellen visual acuity in 25 (27.7%) eyes. The VA remained unchanged in 60 (66.6%) eyes and decreased in 5 (5.5%) eyes. The decrease of VA was affected by corneal opacities in 2 (2.2%) eyes, choroidal neovascular membrane due to multifocal choroiditis in 1 (1.1%), CME due to idiopathic uveitis in 1 (1.1%) and progression of cataract in 1 (1.1%) eye. The diagnostic entities that offered the best final visual acuity were ankylosing spondylitis with 4 of 6 eyes (66.6%) and spondyloartropathy with 2 of 3 (66.6%) eyes reaching a final visual acuity of $\geq 0.6$ after a mean follow-up time of 27 months.

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Medical treatment included administration of topical, periocular (posterior sub-Tenon), or intravitreal injections of corticosteroids in 58 (85.3%) patients, the addition of systemic corticosteroids in 9 (13.2%) patients and systemic immunosuppressive therapy in 2 (2.9%) patients. Antiviral therapy in the form of acyclovir or valacyclovir was used for the treatment of herpetic anterior uveitis in 16 (23.5%) patients. *Toxoplasma* retinochoroiditis was treated with oral antibacterial (trimethoprim/sulfamethoxazole and azithromycin combination) treatment in 2 (2.9%) patients. Intravenous and intravitreal ganciclovir was administered in 1 (1.5%) patient with CMV retinitis.

Phacoemulsification and intraocular lens (IOL) implantation was performed in 10 patients with decreased visual acuity due to cataract development or progression during the follow-up period. Combined phacoemulsification and IOL implantation and pars plana vitrectomy was required in 3 eyes, including 1 for retinal detachment due to CMV infection, 1 for uncontrolled inflammation due to multifocal choroiditis and panuveitis, and 1 for vitreous condensation due to chronic idiopathic inflammation.

## DISCUSSION

Studies suggest that uveitis presenting after the age of 60 years is not as uncommon as previously believed.[2–4] The demographics of the elderly population are changing and the mean life expectancy continues to increase.[1] It is therefore important for clinicians to be familiar with the various etiologies and management of visual impairment in this particular population.

Our aim in the present study was to establish the etiologic distribution and characteristics of uveitis in patients presenting for the first time at or after the age of 60. The most common diagnoses were idiopathic uveitis (33.8%) and herpetic anterior uveitis (33.8%). Previous studies have presented various etiologic results but the majority (26.3–68%) of patients has been found to have idiopathic uveitis, similar to the results of our study.[3,9–11] On the other hand, Makley et al.[4] found *Toxoplasma* retinochoroiditis to be the most common diagnosis (14.8%) in 229 patients over 50 years of age. Favre et al.[2] reported the most common diagnosis as herpes virus uveitis (32.0%). A recent study from Grégoire et al.[15] from France reported sarcoidosis in 34 of 91 uveitis cases (37.4%) and stated that the disorder was more common in older age. As in previous studies, our study suggested a remarkably wide range of underlying etiologies (Table 1). In contrast to our rate of 8.8%, FUS was only reported at a rate of 2% in the Favre et al. study,[2] 1.1% in the Grégoire et al. study,[15] and 1.9% in the Kirsch et al. study.[11] Our higher rate for FUS might be explained with decreased awareness of our patients. As the disease is asymptomatic due to low-grade inflammation, most of these patients presented at advanced ages when visual acuity decreased due to glaucoma and/or cataract. HLA-B27-associated uveitis was diagnosed at a rate similar to ours in other studies (4.4–5.8%).[2,9,11,15] Multifocal choroiditis (3.6%) was reported only in the study of Chatzistefanue et al.[10] Ankylosing spondylitis was found in two studies, at a rate of 10.5% in the Bouillet et al. study[9] and 4.3% in the Chatzistefanou et al. study.[10] *Toxoplasma* retinochoroiditis was not reported in the studies of Favre et al.,[2] Barton et al.,[3] and Kirsch et al.[11] However, it accounted for a percentage similar to ours with 2.9%[10] and 3.2%[15] in two previous studies. Table 4 illustrates the comparison of the distribution of specific diagnostic entities in our study and other series in the literature.

A previous study evaluated the demographic and clinical features of uveitis patients seen at tertiary multicenters in Turkey.[16] The mean age was 35.5 years and 6.5% of patients were older than 60 years. The most common diagnosis was herpetic anterior uveitis (10%), followed by sarcoidosis (4%), ankylosing spondylitis (4%), FUS (4%), others (10%), and undetermined (10%).[16] Similar to our results, Behcet disease was not seen, although it is endemic in our country. However, uveitis associated with sarcoidosis, considered to be a common diagnosis for this age group in the series of Grégoire[15] and reported in 4% in the Kazokoglu et al. study[16] was not observed in our series. The dissimilarities of pattern uveitis may also be explained by the inclusion and exclusion criteria of the studies.

Anterior uveitis (75.0%) was the most common anatomical location of the uveitis in our series. This prevalence was higher than previously reported rates of 47–66% in other studies.[2,3,10,11] Our rate for panuveitis was 13.2%, lower than other previous studies (15.9–44%) except the 2.2% rate of Makley et al.[2–4,9–11,15] The 7.3% of posterior uveitis rate in our study was reported in a wide range of 9.4–60.7% in other studies.[2–4,9–11,15] Intermediate uveitis was the least common anatomical location (4.4%) as in other studies (1.4–9.9%).[2,3,10,11,15] Table 5 illustrates the comparison of uveitis localization in our study with other reports.

Some uveitis entities may appear more frequently in certain ethnic groups. Sarcoidosis is more common in African Caribbean groups, whereas Behcet disease is more prevalent in the Middle and Far East population. *Toxoplasma* incidence is higher in South America and West Africa, and VKH disease is more common in South America and Japan and in more pigmented racial groups.[1] The effects of referral or selection bias, varying diagnostic criteria, and lack of uniform nomenclature classification for uveitis types and causes make comparison of epidemiological data from different populations and regions difficult.[17]

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TABLE 4. The comparision of the distribution of specific diagnostic entities in our study and series of the literature.

| Diagnosis | Makley[4] (*n* = 229) (%) | Favre[2] (*n* = 94) (%) | Barton[3] (*n* = 71) (%) | Chatzistefanou[10] (*n* = 138) (%) | Bouillt[9] (*n* = 19) (%) | Kirsch[11] (*n* = 51) (%) | Grégoire[15] (*n* = 91) (%) | Our study (*n* = 68) (%) |
|---|---|---|---|---|---|---|---|---|
| Age at onset (years) | ≥50 | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 |
| Idiopathic uveitis | 12 (5.2) | 23 (24.4) | 34 (47.8) | 43 (31.2) | 5 (26.3) | 26 (50.9) | 33 (36.3) | 23 (33.8) |
| Herpes viruses | 9 (4.0) | 30 (32.0) | 1 (1.4) | 25 (18.1) | 0 | 8 (15.6) | 5 (5.3) | 23 (33.8) |
| Ankylosing spondylitis | 0 | 0 | 0 | 6 (4.3) | 2 (10.5) | 0 | 0 | 4 (5.8) |
| Fuchs uveitis | 0 | 2 (2.0) | 0 | 0 | 0 | 1 (1.9) | 1 (1.1) | 6 (8.8) |
| HLA-B27-associated uveitis | 0 | 4 (4.4) | 0 | 3 (2.2) | 1 (5.3) | 3 (5.8) | 5 (5.5) | 4 (5.8) |
| Tuberculosis | 10 (4.4) | 0 | 0 | 0 | 0 | 2 (3.9) | 3 (3.2) | 0 |
| Syphilis | 0 | 0 | 0 | 6 (4.3) | 0 | 0 | 0 | 0 |
| Sarcoidosis | 3 (1.3) | 18 (19.1) | 3 (4.2) | 11 (8.0) | 3 (15.8) | 3 (5.8) | 34 (37.4) | 0 |
| Toxoplasmosis | 34 (14.8) | 0 | 0 | 4 (2.9) | 1 (5.3) | 0 | 3 (3.2) | 2 (2.9) |
| Multifocal choroiditis | 0 | 0 | 0 | 5 (3.6) | 0 | 0 | 0 | 2 (2.9) |
| Birdshot choroioretinop. | 0 | 1 (1.0) | 0 | 5 (3.6) | 2 (10.5) | 5 (9.8) | 1 (1.1) | 0 |
| Wegener granulo. | 0 | 0 | 0 | 3 (2.2) | 1 (5.3) | 0 | 1 (1.1) | 0 |
| Intraocular lymphoma | 0 | 1 (1.0) | 0 | 2 (1.4) | 2 (10.5) | 0 | 4 (4.4) | 0 |
| Other | 161 (70.3) | 15 (16.0) | 33 (46.6) | 25 (18.1) | 2 (10.5) | 3 (5.9) | 1 (1.1) | 4 (5.8) |

TABLE 5. The comparision of location of uveitis in our study and series of the literature.

| Localization | Makley[4] (*n* = 229) (%) | Favre[2] (*n* = 94) (%) | Barton[3] (*n* = 71) (%) | Chatzistefanou[10] (*n* = 138) (%) | Bouillet[9] (*n* = 19) (%) | Kirsch[11] (*n* = 51) (%) | Grégoire[15] (*n* = 91) (%) | Our study (*n* = 68) (%) |
|---|---|---|---|---|---|---|---|---|
| Anterior | 85 (37.1) | 62 (66.0) | 44 (61.9) | 78 (56.5) | 5 (26.3) | 24 (47.0) | 22 (24.1) | 51 (75.0) |
| Intermediate | 0 | 4 (4.2) | 6 (8.4) | 2 (1.4) | 0 | 5 (9.8) | 9 (9.9) | 3 (4.4) |
| Posterior | 139 (60.7) | 13 (13.8) | 7 (9.4) | 35 (25.4) | 6 (31.6) | 11 (21.5) | 17 (18.7) | 5 (7.3) |
| Panuveitis | 5 (2.2) | 15 (15.9) | 14 (19.7) | 23 (16.7) | 8 (42.0) | 11 (21.5) | 40 (44.0) | 9 (13.2) |



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This may explain the variable diagnostic entities among the studies. In Turkey, Behcet disease is the most commonly associated systemic disease of uveitis. However, the disease was not represented in series of elderly population. This finding supports the fact that the disease is seen in the young age group of 20–35 years.[18]

Elevation of IOP in uveitis is due to various mechanisms, such as acute or chronic inflammation of the trabecular meshwork, pupillary block, chronic angle closure due to peripheral anterior synechiae, and the use of corticosteroids. Elevated IOP has been more commonly reported in FUS,[19] sarcoidosis,[20] and herpetic disease.[21] In our series, 61.5% of the patients with elevated IOP had presumed herpetic anterior uveitis. The acute increase in IOP in herpetic uveitis has been attributed by most authors to the inflammation of the trabecular meshwork.[22] Permanent IOP increase can also occur as a result of the inflammation, due to the presence of posterior synechia, the use of long-term topical corticosteroids, and the trabecular meshwork damage.[21] Chatzistefanou et al.[10] also reported the highest glaucoma rate to be among anterior uveitis (46.2%) patients, followed by panuveitis (34.8%) and posterior uveitis (17.1%) patients. Our cataract rate was 51.1% in this study. Cataract can occur as a consequence of repeated episodes of uveitis, resulting in lens permeability changes, or as a complication of corticosteroid therapy.[1] This high rate can be explained with the uveitis itself and the corticosteroid treatment given to suppress the inflammation. The advanced age of the patients might also contribute to the development of cataract. Modern cataract surgery with intraocular lens implantation can successfully restore the visual acuity. It is important that the eye be free from active uveitis for a minimum of 3 months before surgery.[1] We achieved an increase of at least 3 lines on the Snellen chart in 8 eyes out of 10 that underwent phacoemulsification and lens implantation surgery following inflammation control.

Macular changes, most commonly in the form of CME, were observed in 10 of 90 (11.1%) eyes in our study. Chatzistefanou et al.[10] reported the most common macular change as CME (60/209 (28.7%) eyes) in their report. In our study, only 1 patient with CME had a systemic risk factor (hypertension). There were 7 (70.0%) idiopathic uveitis cases among these 10 eyes. HLA-B27-associated uveitis, and spondyloarthropathy were the other causes for CME development.

The best corrected visual acuity at the final visit was $\geq$0.6 in 40.0% of the eyes in our study. The diagnostic entity that offered the best final visual acuity was ankylosing spondylitis and spondyloartropathy, with 66.6% of eyes reaching a final visual acuity of $\geq$0.6 after a mean follow-up time of 27 months. Interestingly, the patient who underwent vitreoretinal surgery because of retinal detachment due to CMV retinitis also achieved a visual acuity of $\geq$0.6 16 months after the surgery. On the other hand, the main cause of a final visual acuity of $\leq$0.1 was cataract (6.6%). It was followed by vitreous condensation and cataract (3.3%), primarily due to idiopathic uveitis. We also encountered corneal scar (2.2%), CME (2.2%), the combination of CME and cataract (2.2%), and the combination of corneal scar and cataract (2.2%) in the present study.

We excluded the cases with masquerade syndrome. The majority of patients diagnosed with neoplastic masquerade syndrome have primary intraocular/vitreoretinal lymphoma.[23,24] Even though neoplastic masquerade syndromes are not the leading cause of uveitis in the elderly, they present 1.5–5.3% of the cases in this age group (>60 years old).[10,11,15,23] Diagnosis of masquerade syndrome and distinguishing it from uveitis is difficult but necessary. Especially in elderly patients, primary vitreoretinal lymphoma presents as vitritis and chororetinal lesions.[25,26] Other studies found patients with neoplastic masquerade syndrome to be more likely to be older males and to have unilateral involvement and posterior segment inflammation when compared with uveitis cases.[23]

It is crucial to make a timely and correct diagnosis for this disorder, as it could be lifesaving. The gold standard for the diagnosis is still identifying malignant lymphoid cells in the retina, vitreous, and/or optic nerve.[27–29] Aqueous aspiration, diagnostic vitrectomy, or retinal or chorioretinal biopsy should be performed for this purpose.[29] The use of immunophenotyping, cytologic examination, and polymerase chain reaction can also support the diagnosis.[30–32] Although a vitreous biopsy and cytologic evaluation were performed in 3 patients with severe vitreous inflammation, a vitreoretinal lymphoma could not be diagnosed.

In conclusion, the present study reviewed the characteristics of our uveitis patients presenting for the first time in the elderly. Idiopathic uveitis and herpetic anterior uveitis were the most frequent specific diagnoses that may appear after the age of 60 years. One must take into account that the epidemiology of uveitis varies not only with geographic and genetic factors but also with age. Our study represents a selected sample of patients presented or referred to a specialized eye hospital in Turkey. Although Behcet disease is endemic in this country, it has not been observed in this age group, supporting that the disease is more common between 20 and 35 years of age. It is clear that early diagnosis and adequate control of inflammation will further improve this generally favorable visual prognosis. It is therefore important to be aware of the causes and clinical characteristics of


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uveitis presenting for the first time in this particular population.

## DECLARATION OF INTEREST

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper.

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