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Original Article

SAFETY AND EFFICACY OF ADALIMUMAB THERAPY FOR TREATMENT OF BEHCET'S DISEASE-RELATED UVEITIS IN SOHAG UNIVERSITY HOSPITAL

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Abstract

Purpose: *To determine whether the biologic medication Adalimumab is safe and effective in treating Behcet's uveitis.* ***Methods:*** *An observational prospective cohort study was conducted at the Ophthalmology department of Sohag University Hospital in Sohag, Egypt. Forty eyes of adult patients with full Behçet's disease associated uveitis were included in the study. Visual acuity, anterior chamber cells, vitreous cells, and macular thickness were assessed using optical coherence tomography (OCT) and fluorescence angiography (FA) at 1, 3, and 6 months after therapy started.* ***Results:*** *The mean age was 37.64 ± 9.44 years, with 71.4% of the subjects being males. Evaluation of visual acuity after six months of therapy showed substantial improvement relative to baseline. Furthermore, the slit lamp microscopy evaluation of the anterior chamber cell grading system after six months demonstrated substantial progress, with over two-thirds of cases achieving a grade of (0), in contrast to no instances at baseline. Optical coherence tomography revealed a substantial reduction in retinal thickness after six months of therapy compared to baseline measurements (257.8 ± 80.37 and 339.75 ± 147.52 µm).* ***Conclusion:*** *Our findings show that adalimumab is a safe and effective treatment for uveitis caused by Behçet's disease.*

Keywords: *Behcet's disease, Adalimumab, Uveitis, Biological treatment*

1. Introduction

Idiopathic, chronic, multisystem inflammatory vasculitis, Behçet's disease (BD) is most often identified by recurring oral and vaginal ulcers, skin lesions, and sometimes blinding inflammation inside the eye [1]. Recurrent bilateral non-granulomatous uveitis is the most common ocular involvement pattern; it may affect any part of the uvea, from the front to the back chamber, and even pan-uveitis [2]. Blindness and other severe complications may result from the ophthalmologic symptoms that occur in 50 to 70% of people with Behçet's syndrome, such as uveitis [3]. Onset of ocular Behçet's disease (OBD) and its worst symptoms usually happen in the first year of the disease; young males are more likely to have these symptoms, and the severity of the condition is higher in this age group [4]. The European League Against Rheumatism (EULAR) guidelines for treatment BD indicate that severe ocular disease, defined by retinal vasculitis or macular involvement and/or a loss in visual acuity

by two lines, necessitate extensive therapy [5]. Immunosuppressive drugs, especially azathioprine, and high-dose oral corticosteroids are the cornerstones of treatment. When dealing with severe eye illness, it is recommended to use azathioprine, corticosteroids, and either cyclosporine or anti-tumor necrosis factor (TNF)-α agents. Another option is to use interferon (IFN)-α, with or without corticosteroids, to treat the eye manifestations of Behçet's disease (BD) [6]. The goal of non-invasive uveitis (NIV) therapy is to decrease medication-related adverse effects while simultaneously controlling intraocular inflammation and preventing its recurrence. The current standard of care involves the use of immunosuppressants and corticosteroids, which are known to have both systemic and ocular side effects and are not always effective in reducing inflammation [6]. Hence, it is crucial to find safer and more efficient medicines that target immune response mediators in order to achieve and maintain inflammation remission [7]. It is thought that the proinflammatory cytokine tumor necrosis factor α (TNF-α) plays a role in uveitic inflammation, as there are elevated levels of TNF-α in both the clear fluid and serum of people with uveitis [8]. Adalimumab, which is marketed under the brand name Humira® and manufactured by AbbVie Inc., is an antibody that blocks the biological action of TNF-α [9]. At this time, randomized-control, double-blind phase III trials have only shown that ADA is beneficial to NIU [10]. Infections (such as sinusitis or upper respiratory tract infections), injection site responses, rashes, and increased liver enzymes are the most common side effects (incidence >10%) linked to TNF-α antagonists. Reactivation of TB and viral infections, increased risk of lymphoma and other cancers, and lupus-like condition are among the worst adverse effects. The US Food and Drug Administration has classified adalimumab, like other anti-TNFs, as pregnancy category B, meaning there is no evidence of human harm. No indication of foetal damage linked to adalimumab was found in a research including reproductive animals [11]. It has been noted that TNF-α antagonists might cause or worsen drug-induced inflammatory diseases, such as uveitis and vasculitis, which are ocular adverse effects [4]. The current study aimed to determine whether the biologic medication Adalimumab is safe and effective in treating Behcet's uveitis.

2. Methods

It is a prospective cohort study includes 40 eyes from 28 adult patients with complete Behçet's disease associated uveitis (16 cases with single eyes and 12 cases involving two eyes) in our study, which took place from 1st January, 2023 to 30th April, 2024 at the Ophthalmology dep. of Sohag University Hospital in Sohag, Egypt. All patients were informed about the purpose of the study and given written consent before inclusion. Full ethical considerations were followed according to the declaration of Helsinki, ethical approval was taken from the medical research ethics committee of Sohag University (Soh-Med-22-11-13). Cases were eligible to participate in the study provided they fulfilled the following criteria: People who met the inclusion criteria were those who were at least 18 years old and had a diagnosis of Behçet's disease with full uveitis, as defined by the International Study Group for Behçet Disease. The SUN Working Group, which included 79 uveitis experts from 18 nations and 62 clinical institutions, standardised the anatomical categorisation of uveitis. A "modified" green field approach was used to construct the first language, and a "modified" Delphi process was used to improve it using web-based surveys and teleconferences. Ontological features of each condition were used to provisionally classify terms. In order to finish the mappings, the Working Group got together

and used nominal group methods as an organised approach. Final Results: In a meeting of the complete working group, super-majority agreement was achieved for each condition, validating the categorisation of ideas into dimensions to identify 28 primary uveitic illnesses using nominal group procedures [12]. Participants were not allowed to participate if they had any of the following conditions: hepatic, renal, cardiac, demyelinating, or other diseases; a history of drug abuse or cancer; or syphilis, toxoplasmosis, tuberculosis, or any other infection.

2.1. *Treatment plan*

For six months, patients were given adalimumab (40 IU) by subcutaneous injection twice a week. This was done either as a main treatment (two eyes in one case and both eyes in the other) or when corticosteroids and at least one conventional synthetic immunosuppressant failed. Patients also began on a regimen of systemic corticosteroids (methylprednisolone 1 mg/kg/day), which was reduced as the uveitis and systemic symptoms of Behçet's disease improved. The data collected from the cases studied through: ***)** *Pre-treatment evaluation* through a rheumatologist and an ophthalmologist by full ophthalmological examination. ***)** *Safety concern*: Patients were assessed before starting therapy to rule out any infections or malignancies, and monthly laboratory testing was conducted, including complete blood counts, erythrocyte sedimentation rate, C-reactive protein, and liver function tests. ***)** *Efficacy* was evaluated through full ophthalmological examination included slit lamp bio-microscopy that assessed anterior chamber cell according the SUN working group grading system that was graded on a scale of 0 to 4 [13], visual acuity testing, Fundus examination for assessment of vitreous cell grades by NIH grading system for vitreous cells [14], Ocular coherence tomography (OCT) and fluorescence angiography (FA). ***)** *Follow up evaluation*: Follow up schedule; Patients' visual acuity, anterior chamber cell count, and vitreous cell count were measured at baseline, three, and six months into the treatment period. OCT was performed on the 3^{rd} and 6^{th} month. FA was performed at 6^{th} month after initiation of treatment.

2.2. *Statistical analysis*

Statistical Package for the Social Sciences, version 27.0, was used for data analysis. For qualitative data, we used frequencies (%), whereas for quantitative data, we used means (SD) and medians (IQR). When comparing groups of qualitative data, such as grades of anterior chamber cell, vitreous cell, and fluorescence angiography at various follow-up dates, a chi-square test was used. When comparing non-parametric data with more than two sets of independent variables, the Kruskal-Wallis test was used. The non-parametric data was compared between the two sets of independent variables using the Mann-Whitney U test.

3. Results

The study involved 40 eyes from 28 adults with full Behçet's disease-related uveitis. Concerning the safety of Adalimumab, no major adverse effects were found, aside from flu-like symptoms. In one case, there was moderate pruritus at the injection site. Out of the 40 patients studied, 6 began Adalimumab as their main therapy, while 34 had resistance to other treatments. The mean age of the studied cases was (37.64 ± 9.44) years. About two-thirds of cases aged between 30 years to 50 years. It was found that 71.4% of cases were males, as shown in tab. (1). Table (2) describes that there is statistically significant improvement in BCVA and UCVA LogMar at follow ups in comparison to baseline (P-value < 0.05). Table (3) describes that there is statistically significant improvement in

grades of anterior chamber cell and different times of therapy (P-value < 0.05). Slit lamp examination shows that 45% of cases at baseline have +1 grade and 45% of them have grade +2 or more. However, six months of Adalimumab therapy, 65% of cases with grade 0, only 15% of cases with grade +1 and no cases with grade +2 or more. Table (4) describes that there is a highly statistically significant improvement in grades of vitreous cell distribution after initiation of treatment in comparison to baseline (P-value < 0.05). At baseline, 35% of cases show grade +1, 45% of cases show grade +2 and more. After one month of therapy, 35% of cases with grade 0, 25% of cases with grade +1, only 30 % of cases grade +2and more which indicate improvement of vitreous cell. Moreover, six months of treatment show 75% of cases grade 0 and 25% of cases grade +1. There is significant decrease in macular thickening six months of therapy (257.8 ± 80.37) µm in comparison to baseline and three months value (339.75 ± 147.52 and 285.15 ± 102.75) µm, as shown in tab. (5). There is significant improvement in fluorescence findings regarding vitritis and disc edema six months of Adalimumab therapy (P-value <0.05). Also, there is a significant increase in free findings of fluorescence angiography six months of therapy in comparison to those free findings at start of therapy. However, there is insignificant improvement in vasculitis findings after six months of therapy (P-value > 0.05), as shown in tab. (6). There is a statistically significant increase in UCVA and BCVA at six months of treatment in comparison to baseline. Moreover, there is a significant decrease in macular thickness six months of treatment in comparison to baseline (268.57 ± 100.99 and 335.57 ± 168.19), tab. (7).

Table 1: socio-demographic characteristics of the studied participants

Variable			Summary statistics (n=28)
Age (years)		Mean ± SD	37.64 ± 9.44
		Median (IQR)	37 (33-44)
Gender	***Male***	No. (%)	20 (71.4%)
	Female	No. (%)	8 (28.6%)
Affected eye	***Single eye***	No. (%)	16 (57.14%)
	Two eyes	No. (%)	12 (42.86%)

Table 2: visual acuity assessment among the studied cases

Variable	Summary statistics (n=40)				P-value
	Baseline	*One month*	*Three months*	*Six months*	
UCVA (LogMar)					
Mean ± SD	1.11 ± 0.6	1.02 ± 0.66	0.97 ± 0.6	0.84 ± 0.64	P1=0.04
Median (IQR)	1.3 (0.52-1.8)	1 (0.42-1.52)	1 (0.35-1.46)	0.69 (0.3-1.46)	P2=0.003
BCVA (LogMar)					
Mean ± SD	1.07 ± 0.66	0.99 ± 0.57	0.86 ± 0.6	0.76 ± 0.61	P1=0.02
Median (IQR)	1.3 (0.43-1.52)	1 (0.53-1.67)	0.84 (0.3-1.3)	0.61 (0.24-1.3)	P2=0.04 P3<0.001 P4<0.001

UCVA: *Uncorrected visual acuity,* ***BCVA:*** *best corrected visual acuity,* ***P1:*** *among all periods,* ***P2:*** *baseline vs one month,* ***P3:*** *baseline vs three month,* ***P4:*** *baseline vs six months.*

Table 3: slit-lamp bio microscopy of anterior chamber cell among the studied participants.

Grade		Summary statistics (n=40)				P-value
		Baseline	*One month*	*Three months*	*Six months*	
0	No. (%)	0 (0%)	10 (25%)	18 (45%)	26 (65%)	P1 < 0.001 P2=0.007 P3<0.001 P4<0.001
+0.5	No. (%)	4 (10%)	6 (15%)	8 (20%)	8 (20%)	
+1	No. (%)	18 (45%)	12 (30%)	12 (30%)	6 (15%)	
+2	No. (%)	10 (25%)	8 (20%)	2 (5%)	0 (0%)	
+3	No. (%)	4 (10%)	4 (10%)	0 (0%)	0 (0%)	
+4	No. (%)	4 (10%)	0 (0%)	0 (0%)	0 (0%)	

P1: *among all periods,* ***P2:*** *baseline vs one month,* ***P3:*** *baseline vs three months,* ***P4:*** *baseline vs six months.*

Table 4: vitreous cell by fundus examination among the studied participants

Grade		Summary statistics (n=40)				P-value
		Baseline	*One month*	*Three months*	*Six months*	
0	No. (%)	8 (20%)	14 (35%)	28 (70%)	30 (75%)	P1 < 0.001 P2=0.03 P3<0.001 P4<0.001
+0.5	No. (%)	0 (0%)	4 (10%)	0 (0%)	0 (0%)	
+1	No. (%)	14 (35%)	10 (25%)	10 (25%)	10 (25%)	
+2	No. (%)	6 (15%)	6 (15%)	2 (5%)	0 (0%)	
+3	No. (%)	6 (15%)	6 (15%)	0 (0%)	0 (0%)	
+4	No. (%)	6 (15%)	0 (0%)	0 (0%)	0 (0%)	

Table 5: optical coherence tomography findings among the studied participants

Variable		Summary statistics (n=40)			P-value
		Baseline	*Three months*	*Six months*	
Macular thickening (µm)	***Mean ± SD***	339.75 ± 147.52	285.15 ± 102.75	257.8 ± 80.37	P= 0.02 P1= 0.14 P2= 0.004 P3= 0.16
	Median (IQR)	300 (224.75-440.5)	265 (220-324.25)	230 (212.5-287.5)	

P: *among the three times,* ***P1:*** *baseline vs three months,* ***P2:*** *baseline vs six months,* ***P3:*** *three months vs six months*

Table 6: fluorescence angiography among the studied participants

Variable	Summary statistics (n=40)		P-value
	Baseline No. (%)	*Six months No. (%)*	
Free	11 (27.5%)	24 (60%)	0.003
Vasculitis	22 (55.5%)	15 (37.5%)	0.1
Vitritis	20 (50%)	0 (0%)	<0.001
Disc edema	10 (25%)	0 (0%)	<0.001

Table 7: Comparison between baseline and six months of treatment according to visual acuity and macular thickness among cases with primary treatment and refractory cases

Variable		Summary statistics (n=6)		P-value
		Baseline	*Six months of treatment*	
Cases with primary treatment (n=6)				
UCVA	***Mean ± SD***	0.84 ± 0.75	0.87 ± 0.52	0.02
	Median (IQR)	0.52 (0.22-1.8)	0.69 (0.39-1.52)	
BCVA	***Mean ± SD***	0.8 ± 0.93	1.08 ± 0.61	0.005
	Median (IQR)	0.3 (1.3-2)	1.3 (0.3-1.52)	
Macular thickness by OCT	***Mean ± SD***	335.57 ± 168.19	268.57 ± 100.99	< 0.001
	Median (IQR)	310 (200-421)	280 (196-306)	
Refractory cases (n=34)				
UCVA	***Mean ± SD***	1.16 ± 0.57	0.83 ± 0.67	**<0.001**
	Median (IQR)	1.3 (0.52-1.8)	0.69 (0.25-1.35)	
BCVA	***Mean ± SD***	1.12 ± 0.62	0.75 ± 0.63	**<0.001**
	Median (IQR)	1.3 (0.52-1.52)	0.52 (0.26-1.3)	
Macular thickness by OCT	***Mean ± SD***	351.12 ± 157.24	259.18 ± 87.02	**<0.001**
	Median (IQR)	310 (221.5-451.25)	229 (210-292.5)	

4. Discussion

Patients with posterior segment involvement of Behçet's syndrome should be treated with conventional immunosuppressants or biologic response modifiers, according to the European Alliance of Associations for Rheumatology (EULAR) recommendations. The quality of life of patients with Behçet's disease is greatly affected by uveitis in all areas of life, not just visual acuity [15]. Intraocular inflammation, or uveitis, affects the choroid and iris anteriorly and the ciliary body posteriorly, together known as the uvea. Uveitis may cause blindness or severe vision loss if not treated [16]. Patients experiencing acute sight-threatening uveitis

for the first time or again should be given high-dose corticosteroids along with interferon-α or tumor necrosis factor (TNF)-α monoclonal antibodies, like infliximab or adalimumab (ADA). The latter is being suggested more and more as a main treatment option to conserve corticosteroids [17]. The effectiveness of adalimumab therapy in our study was evaluated using visual acuity, anterior chamber and vitreous cell grades, fluorescence angiography, and macular thickening via optical coherence tomography (OCT) at multiple intervals (baseline, one month, three months, and six months), while the safety of the treatment was determined by the occurrence of therapy-related complications. There was a statistically significant improvement in the subjects' uncorrected visual acuity (UCVA) following therapy beginning compared to baseline UCVA (LogMar) when assessed throughout the treatment period. After one month of therapy, the average UCVA (LogMar) decreased to 0.99 ± 0.57, then to 0.97 ± 0.6 after three months, and finally to 0.84 ± 0.64 after six months. The baseline value was 1.11 ± 0.6. At the beginning of therapy, the individuals' Best Corrected Visual Acuity (LogMar) was 1.07 ± 0.66, which improved to 0.99 ± 0.57 after one month, 0.86 ± 0.6 after three months, and 0.76 ± 0.61 after six months of treatment, indicating a statistically significant improvement compared to the baseline. Our results aligned with those of Soheilian et al., who evidenced a significant improvement in visual acuity [18]. Our findings aligned with those of Evereklioglu et al., who demonstrated that after ADA, BCVA markedly improved, and no ocular or systemic complications arose throughout the treatment [19]. The disparity may be ascribed to our analysis including six primary cases, while Evereklioglu et al. concentrated only on refractory patients. Our findings corresponded with those of Fabiani et al., who noted a statistically significant enhancement in BCVA relative to baseline (7.4 ± 2.9 vs 8.5 ± 2.1) [20]. Adding to that, our results on visual acuity are in accordance with those of Ho et al., who found that the average standard deviation logMAR best-corrected visual acuity was 0.711 0.63 at the beginning and increased to 0.172 1.04 after a year, reaching a statistically significant improvement [21]. Furthermore, our findings correspond with those of Abdelhalim et al., who revealed that patients receiving ADA therapy have substantial improvement in visual acuity in BU. This suggests that ADA is favoured for achieving enhanced visual results in BU patients relative to traditional treatment [22]. Regarding slit-lamp bio-microscopy, there is a statistically significant improvement in the grades of anterior chamber cells with a prolonged duration of treatment. The slit lamp examination reveals that 45% of patients at baseline exhibit a +1 grade, whereas 45% have a grade of +2 or above. Following six months of Adalimumab treatment, 65% of patients demonstrated grade 0, 15% exhibited grade +1, and there were no occurrences of grade +2 or above. This corresponds with the results of Soheilian et al., who demonstrated a statistically significant enhancement in AC cell grade after a mean follow-up duration of 19.24 months of Adalimumab treatment [18]. Moreover, our calculations corresponded with those of Evereklioglu et al., who documented improvements in AC cell grade after 24 weeks of treatment [19]. The fundus examination of vitreous cells demonstrates a statistically significant increase in the distribution grades of vitreous cells associated with extended treatment duration. At baseline, 35% of patients had grade +1, while 45% showed grade +2 or above. Following one month of treatment, 35% of patients exhibited grade 0, 25% grade +1, and just 30% grade +2 or above, indicating an enhancement in vitreous cell condition. Moreover, after six months of therapy, 75% of patients were categorised as grade 0 and 25% as grade +1. The results correspond with those of Soheilian et al., who documented a statistically significant decrease in vitreous haze grade after

an average follow-up of 19.24 months of Adalimumab treatment [18]. Furthermore, in agreement with Everekliogluet al., who documented improvements in vitreous cell grade after 24 weeks of treatment [19]. Our findings aligned with those of Diaz-Liopis et al., who showed that anterior chamber inflammation and vitreous inflammation significantly decreased from mean values of 1.51 and 1.03 at baseline to 0.25 and 0.14, respectively, after 6 months [23]. This data is in line with that of Everekliogluet al., who found a statistically significant decrease in mean macular thickness from 243.5 to 235.5 µm after 24 weeks of treatment, as measured by optical coherence tomography evaluation of macular thickness (257.8 ± 80.37) compared to baseline and three-month assessments (339.75 ± 147.52 and 285.15 ± 102.75, respectively) [19]. At the 6-month follow-up following adalimumab therapy, our results corroborate those of Díaz-Llopis et al., who found a baseline macular thickness of 296 (102) µ, which had dropped to 240 (36) µ, reaching statistical significance [23]. In addition, our research confirmed the findings of Fabiani et al., who saw a notable enhancement in OCT results, showing an average decrease in central macular thickness (CMT) of 27.27 ± 42.8 µm at the conclusion of the 12-month follow-up period after therapy beginning [20]. Our findings, on the other hand, were at odds with those of Soheilian et al., who found a non-significant reduction in macular thickness [18]. The variance may result from differences in corticosteroid treatment methods between the patients studied and those in other countries. Our study's investigation of fluorescence angiography demonstrated a significant improvement in fluorescence observations associated with vitritis and disc oedema after six months of Adalimumab treatment. Initially, there were 20 instances (50%) of vitritis and 10 instances (25%) of disc oedema, both of which shown recovery after six months. Furthermore, there was a significant rise in the frequency of free findings in fluorescence angiography after six months of therapy relative to the initial results. The incidence of vasculitis decreased, with 15 cases (37.5%) afflicted at six months, in contrast to 22 instances (55%) at baseline. We found results that were concordant with those of Fabiani et al., who found retinal vasculitis in 22 patients (55% at baseline, 20% at three months, and only 1 instance, 2.5% at 12 months). Compared to baseline, there was a statistically significant improvement in FA at the three- and twelve-month follow-ups [20]. Our findings ran counter to those of Ho et al., who found active retinal vasculitis in five eyes at baseline. Once adalimumab treatment began, all instances of retinal vasculitis completely cleared up [21]. In addition, our results were in agreement with those of Perra et al., who also found that eight patients had panuveitis, eight had severe bipolar aphthhosis, three had retinal vasculitis, and three had severe folliculitis; that adalimumab improved the clinical status of seventeen out of nineteen patients; and those ocular symptoms, including panuveitis and retinal vasculitis, responded quickly in every instance [17]. Our results corresponded with those of Mostafa A. Waley et al., who documented those 10 eyes presented with pan-uveitis, of which 5 exhibited active retinal vasculitis. Furthermore, three patients were monocular, with the affected eye being pseudo-phakic and displaying pan-uveitis, while the contralateral eyes demonstrated foveal scarring and considerable visual field impairment. After the commencement of adalimumab therapy, the seven eyes showed complete resolution [25]. Concerns about anti-TNF therapy's safety persist [26]. The safety evaluation of adalimumab did not reveal any serious issues that necessitated the end of treatment. Adalimumab is a safe and effective treatment for non-infectious uveitis, which is in line with the findings of Hiyama et al., who demonstrated that the drug did not cause any serious adverse effects that necessitated its withdrawal [27]. Our findings corresponded with those

of Tynjälä et al., who indicated that no notable adverse events or side effects were seen, and seven patients discontinued adalimumab during the follow-up: six owing to ineffectiveness and one because to inactive uveitis [28]. Moreover, our findings aligned with the conclusions of Suhler et al., who reported that patients had treatment-limiting toxicity directly linked to the study drug, with the primary reason for study withdrawal being either principal or secondary inefficacy [29]. Adalimumab has a good safety profile and shows promise as a treatment option for young patients with refractory BD-related uveitis; our findings corroborate those of Ho et al., who found no side effects in patients treated with this drug [21]. In addition, the trial included 19 patients; 17 of them (89.5%) began adalimumab owing to illness refractory, while 2 (10.5%) began it as a result of severe responses to CSA and infliximab (Perra et al.). One patient's severe infusion response characterised by urticaria and angioedema led to the discontinuation of adalimumab. The results indicate that adalimumab is a safe and viable alternative for patients with Behçet's disease who continue to have overwhelming symptoms [24]. Visual acuity, macular thickness using optical coherence tomography (OCT), fluorescence angiography, and grades of anterior chamber and vitreous cells were some of the efficacy measures used to evaluate the safety and efficacy of adalimumab therapy, which was included as a strength of the research.

5. Recommendations

The results of this study support the use of adalimumab to treat uveitis in patients with Behcet illness. To identify issues and repercussions in the long run, further research with longer follow-up periods is required. In addition, research comparing the efficacy of adalimumab monotherapy with that of adalimumab in combination with corticosteroids and immunosuppressive medications is necessary.

6. Conclusion

Our study found that compared to baseline data, visual acuity, anterior chamber cell grade, vitreous cell grade, macular thickness as measured by OCT, and fluorescence angiography outcomes six months after adalimumab treatment were significantly improved. There was no significant difference between the six-month follow-up post-therapy and baseline measurements, indicating that adalimumab did not worsen the vasculitis condition. No problems occurred throughout the follow-up period, showing that treatment was terminated. Our study proves that adalimumab is effective and safe for improving uveitis related to Behçet.

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