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RESEARCH

EVALUATION OF SUBCONJUNCTIVAL HEMORRHAGE IN ELDERLY INDIVIDUALS

ABSTRACT

Introduction: To evaluate the clinical and demographic characteristics of elderly patients with subconjunctival haemorrhage

Materials and Method: We evaluated 47 patients >60 years of age with subconjunctival haemorrhage who were admitted to our clinic. Various parameters were recorded, including age, gender, affected eye, haemorrhage localization, subconjunctival haemorrhage recurrence, presence of systemic and heart diseases, previous ocular surgery, drug use and presence of additional symptoms.

Results: Among the 47 patients, 27 (57.4%) were male and the mean age was 67.96 ± 6.71 (range, 60–88) years. The left eye was affected in 23 cases (48.9%) and the right eye in 22 cases (46.8%). In total, 26 patients were taking antithrombotic medications associated with an increased risk of subconjunctival haemorrhage. Among these patients, 15 (57.7%) were taking aspirin, ten (38.5%) were taking warfarin and one (3.8%) was taking clopidogrel. Symptoms capable of inducing haemorrhage were observed in 23 cases (48.9%). These comprised itchiness, which can cause minor ocular trauma (19 cases, 82%), coughing (three cases, 13%) and constipation (one case, 4.35). Hypertension was the most commonly observed condition in the study population. Subconjunctival haemorrhage most frequently presented in the nasal region of the eye (51.1%). Recurrence of subconjunctival haemorrhage was not significantly associated with systemic disease, concurrent medication or itchiness.

Conclusion: The majority of elderly patients with non-traumatic subconjunctival haemorrhage were males, and non-traumatic subconjunctival haemorrhage was most frequently observed in the nasal region of the eye. The parameters most frequently associated with subconjunctival haemorrhage were hypertension and aspirin use.

Key Words: Conjunctiva; Eye Hemorrhage; Fibrinolytic Agents; Geriatrics; Hypertension.

ARAŞTIRMA

YAŞLI BİREYLERDE GÖRÜLEN SUBKONJONKTİVAL HEMORAJİNİN DEĞERLENDİRİLMESİ

ÖZ

Giriş: Yaşlılarda görülen subkonjonktival hemorajinin klinik ve demografik özelliklerinin değerlendirilmesidir.

Gereç ve Yöntem: Kliniğimizde subkonjonktival hemoraji görülen 60 yaş üstü 47 olgu değerlendirildi. Olguların yaşı, cinsiyeti, etkilenen gözü, hemorajinin lokalizasyonu, tekrarlama öyküsü, sistemik hastalık varlığı, geçirilmiş göz cerrahisi, kapak hastalık varlığı, hemorajiye neden olabilecek ilaç kullanımı ve ek semptom varlığı incelendi.

Bulgular: Olguların 27'si (%57.4) erkek olup yaş ortalaması 67.96±6.71 yıl (60-88) idi. Olguların %49'unda sol göz, %47'sinde sağ göz etkilenmişti. Olguların 26'sında hemorajiye neden olabilecek ilaç kullanmaktaydı. On beş olgu (%57,7) antitrombotik ilaç asetilsalisilik asit, 10 olgu (%38,5) antikoagulan warfarin, 1 olgu antitrombotik ilaç Klopidogrel hidrojen sülfat kullanmaktaydı. Hemorajiye neden olabilecek semptomlar 23 olguda (%48,9) görüldü. Bunlardan 19 olguda (%82) gözlerde kaşıntı, 3 olguda (%13) öksürük, 1 olguda kabızlık mevcuttu. Eşlik eden sistemik hastalıklardan en çok hipertansiyon görüldü. Subkonjonktival hemoraji en sık nazal kadranda izlendi. Kanama tekrarlarına göre ilaç kullanımı, sistemik hastalık ve göz kaşıntısı varlığı arasında anlamlı farklılık saptanmadı.

Sonuç: Yaşlılarda travmatik olmayan subkonjonktival hemoraji daha çok erkeklerde ve nazal alanda izlendi. En sık hipertansiyon beraberliği ve antitrombotik ilaç aspirin kullanımı izlendi.

Anahtar Sözcükler: Fibrinolitik Ajanlar; Geriatri; Göz Hemorajisi; Hipertansiyon, Konjonktiva.

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Introduction

Subconjunctival haemorrhage (SCH) is a common eye disorder, localised bleeding under the conjunctiva (1,2). It is clinically defined as a benign condition and typically does not require treatment. SCH typically resolves within a few weeks, and the condition is not associated with long-term defects in visual function (2). However, when a haemorrhage persists or recurs, it is important to investigate the underlying cause (1).

Subconjunctival haemorrhage can result from systemic or ocular conditions, drugs or trauma (3). Ocular conditions associated with SCH include acute conjunctivitis, local ocular trauma, conjunctival tumours, ocular amyloidosis, contact lens usage, ocular surgery and ocular adnexal tumours. Systemic conditions associated with SCH include systemic vascular diseases, sudden severe venous congestion, haematological dyscrasias, systemic trauma, acute febrile systemic diseases, drug use, carotid cavernous fistulas, menstruation and delivery in newborns. Subconjunctival haemorrhage can also result from the use of anticoagulant or antiplatelet medications (4).

In a previous study of 8726 patients, the incidence of SCH was 2.9%, and SCH was not associated with patient age or gender. In addition, SCH in older patients were frequently presented with systemic hypertension (5). Mimura et al. reported that the primary risk factors for SCH in younger patients are trauma and contact lens-induced injury, whereas hypertension is the primary risk factor in older patients (2).

The majority of SCH cases spontaneously arise. The reported prevalence of hemostatic alterations in patients with recurrent, spontaneous SCH is similar to the general population. Haemostatic screening or second level blood clotting tests cannot effectively predict SCH recurrence (6,7).

In this study, we aimed to evaluate the clinical and demographic characteristics of elderly patients with SCH.

Materials and Method

Individuals older than 60 years of age with diagnosed SCH were consecutively enrolled from our outpatient clinic over a 12-month period. This study was conducted in accordance with the tenets of the Declaration of Helsinki, and written informed consent was obtained from all participants. This study was approved by the ethics committee of the Department of Ophthalmology, Medipol University, Istanbul, Turkey.

Individuals with a history of ocular surgery, infectious conjunctivitis and trauma to the eye or brain within seven days of subconjunctival haemorrhage diagnosis were excluded from the study. All study participants underwent a detailed ocular evaluation, which included administration of the Snellen visual acuity chart, intraocular pressure measurements and examination of the anterior segment and dilated fundus.

The diagnosis of SCH was made by inspection and slit-lamp examination. Participants were asked to report their history of systemic diseases (hypertension, diabetes, cardiovascular abnormalities, collagen vascular diseases, jaundice, bleeding disorders or drug use), ocular trauma and Valsalva manoeuvre (coughing, straining, heavy lifting or vomiting).

We recorded various demographic and clinical parameters, including age, gender, affected eye, haemorrhage location, disease recurrence, systemic disease, valvular heart disease, previous eye surgery and drug use.

In cases of spontaneous SCH with no history of systemic disease, blood pressure monitoring and routine laboratory tests (fasting blood glucose, blood count and biochemistry) were performed. Hypertension was defined as the use of medications for hypertension or blood pressure values ≥140/90 mmHg at two different time points. Patients previously treated for haemorrhage were excluded from the study. Patients were informed about SCH and were clinically monitored.

Statistical Analysis

Descriptive statistics (mean, standard deviation, median, frequency, rate, minimum and maximum), Yates Continuity Correction and Fisher's exact test were used qualitatively to analyse the data. Statistical analyses were conducted using Number Cruncher Statistical System 2007 and Power Analysis and Sample Size 2008 Statistical Software (Utah, USA). Values of p <0.05 were considered statistically significant.

Results

A total of 47 patients were enrolled in the study. Twenty participants (42.6%) were females and 27 (57.4%) were males. The mean age of study participants was 67.96 ± 6.71 years (range: 60–88 years). The left eye was affected in 23 cases (48.9%) and the right eye in 22 cases (46.8%). Two participants (4.3%) presented with bilateral involvement. 12 patients (25.5%) had previously undergone eye surgery (Table 1).

Clinical conditions implicated in SCH (itchiness, cough and constipation) were reported in 23 cases (48.9%). Among this group of patients, 19 (82.6%) reported itchiness, which can induce minor eye injury. Three patients (13%) reported

Table 1— Clinical Characteristics of the Participants.

Parameter		n	%
Eye involvement	Left eye	23	48.9
	Right eye	22	46.8
	Bilateral	2	4.3
Previous ocular surgery		12	25.5
Ocular surface disease		20	42.6
Additional symptoms	No	24	51.1
	Yes	23	48.9
	Itchiness	19	82.6
	Constipation	1	4.3
	Cough	3	13.0

Table 3— Clinical Features of Subconjunctival Haemorrhage.

		n	%
Recurrence	No	30	63.8
	Yes	17	36.2
	Twice	11	64.7
	Three times	6	35.3
Frequency according to SCH location	Inferior	5	10.6
	Nasal	24	51.1
	Temporal	8	17.0
	Temporal-nasal-inferior	1	2.1
	Temporal-superior-inferior	1	2.1
	Four quadrants	8	17.0

SCH, subconjunctival haemorrhage.

cough and one (4.3%) reported constipation; both conditions can cause Valsalva retinopathy (Table 1). Among the total study population, 17 participants (36.2%) experienced SCH recurrence. SCH was most commonly observed in the nasal region of the eye (24 cases, 51.1%) (Table 1).

26 (55.3%) participants were taking antithrombotic medications associated with an increased risk of haemorrhage. Among this group, 15 patients (57.7%) were taking aspirin (acetylsalicylic acid), ten (38.5%) the anticoagulant warfarin and (3.8%) clopidogrel (Table 2).

A total of 40 participants (85.1%) had a systemic disease. Among them, 14 patients (35%) had hypertension, seven (17.5%) had heart disease and hypertension and seven (17.5%) had heart disease in the absence of hypertension (Table 2).

Table 2— Systemic Disease and Drug Use of the Participants.

Parameter		n	%
Drug Use	No	21	44.7
	Yes	26	55.3
	Aspirin	15	57.7
	Warfarin	10	38.5
	Clopidogrel	1	3.8
Systemic disease		40	85.1
	Hypertension (HT)	14	35
	Cardiac disease and HT	7	17.5
	Cardiac disease	7	17.5
	Cerebrovascular occlusion disease and HT	4	10
	Diabetes mellitus and HT	3	7.5
	Chronic asthma	2	5
	Chronic kidney disease	2	5
	Bleeding abnormalities	1	2.5

SCH recurrence was not significantly associated with drug use, systemic disease or itchiness ($p>0.05$) (Table 3).

Discussion

Subconjunctival haemorrhage is a common clinical condition frequently treated at outpatient eye clinics. Although SCH can resolve spontaneously, the appearance of the haemorrhage can be worrisome to patients. SCH is typically a benign disorder and can be caused by a variety of factors (8).

Hu et al. reported that the incidence of non-traumatic SCH was lowest in individuals ten to 19 years of age (25.2 cases per 10,000 individuals) (9). In addition, in patients 20 years and older, the incidence of non-traumatic SCH gradually increased as the occurrence of thrombocytopenia, hypertension and antithrombotic medication use increased. In this study, the incidence of SCH reached a peak of 1.36 new cases per 100 subjects in individuals 60 to 69 years of age (9).

Fukuyama et al. reported that the incidence of SCH was 2.9% in a study population of 8726 patients and systemic hypertension was strongly associated with SCH in older patients (5). In a study of 6843 patients published by Kaimbo et al [10], SCH was reported in 61 eyes from 58 patients (0.8%). Among these patients, 30 (51.7%) were diagnosed with traumatic SCH and 28 (48.3%) with spontaneous SCH. Similar to the findings reported by Fukuyama et al., hypertension (14.3%) was the condition most frequently reported by patients with spontaneous SCH [10]. Sahinoglu et al. [1] conducted a study of 50 patients with SCH in Turkey. They reported that 34 patients (68%) with SCH had traumatic SCH

Table 4— Relationship Between Subconjunctival Haemorrhage Recurrence and Drug Use Systemic Disease and Itchiness.

		Recurrence (-) (n=30)	Recurrence (+) (n=17)	p
Drug use	No	16 (53.3%)	5 (29.4%)	0.201[a]
	Yes	14 (46.7%)	12 (70.6%)	
Systemic disease	No	5 (16.7%)	2 (11.8%)	1.000[b]
	Yes	25 (83.3%)	15 (88.2%)	
Itchiness	No	16 (53.3%)	12 (70.6%)	0.396[a]
	Yes	14 (46.7%)	5 (29.4%)	

[a]Yates's Continuity Correction; [b]Fisher's Exact Test.

and 16 patients (32%) had spontaneous SCH. Consistent with previous reports, the condition most frequently observed in patients with spontaneous SCH was hypertension (1). Mimura et al. reported that the primary risk factor for SCH was hypertension (47.5%) in patients aged 61–94 years of age (8).

We evaluated the clinical and demographic characteristics of geriatric patients with SCH. Consistent with previous reports, the majority of patients (85.1%) with SCH had a systemic disease, of which hypertension was the most common. In this study, SCH was more frequently observed in men than in women. Hu et al. (9) and Kaimbo et al. (10) reported that the incidence of SCH in the general population was significantly higher in women than in men. In a study published by Sahinoglu et al. (1), the majority of patients with spontaneous SCH (68.8%) were female, whereas the majority of patients with traumatic SCH (70.6%) were male. By contrast, Fukuyama et al. did not detect a significant association between SCH and gender or age (5).

Unilateral SCH was observed in 95.7% of cases. In a study by Kaimbo et al., 90% of SCH cases were unilateral, and 36.1% and 26.2% of cases were observed in the temporal (36.1%) and nasal (26.2%) region, respectively (10). Mimura et al. reported that SCH predominantly presents in the inferior region of the eye, and that traumatic SCH most frequently presents in the temporal region (11). In a study by Sahinoglu et al., SCH most frequently localised to temporal areas and presented with equal frequency in the right and left eyes (1).

Previous studies have suggested that the use of aspirin, clopidogrel or warfarin is a risk factor for spontaneous SCH (4,8,9). In this study, 55.3% of participants were taking antithrombotic medication. Of these patients, 15 (57.7%) were taking aspirin and 38.5% were taking the anticoagulant warfarin. Hu et al. reported that non-traumatic SCH was significantly associated with the use of aspirin, compared to warfarin and clopidogrel (9). Other studies have also observed a correlation between aspirin and SCH (12-14).

Previous studies have demonstrated that warfarin is associated with hyphema, bloody tears and subconjunctival, vitreous, retinal and choroidal haemorrhages (15-17). Finh et al. (17) investigated bleeding complications in 3702 patients taking warfarin. Bleeding events occurred in 2376 patients and 15% of first bleeding events were minor (nosebleed, bruising and mild haemorrhoid). The most common site for serious bleeding events was the genitourinary tract (24%), followed by the gastrointestinal tract (22%) and skin/soft tissues (19%) (17).

In this study, clinical factors capable of inducing SCH, including itchiness, cough and constipation, were observed in 48.9% of the study population. SCH recurrence was observed in 36.2% of cases. Recurrent SCH was not significantly associated with systemic disease and eye itchiness or medication use.

A sudden increase in intrathoracic pressure resembling a Valsalva manoeuvre, such as sneezing, coughing, vomiting or constipation can trigger SCH, especially in elderly individuals, who have more sensitive conjunctival blood vessels (1,10,18,19).

In conclusion, SCH is a benign ocular disorder that resolves spontaneously within two to three weeks. In some cases, SCH may be recurrent or cause permanent blood-staining (8). In rare cases, SCH is associated with serious or even life-threatening conditions, such as leukaemia (19,20), bleeding abnormalities (21), cavernous haemangioma of the conjunctiva (22) and ocular adnexal lymphoma (23).

It should be considered that there may be serious underlying causes in cases with recurrent SCH. The most important approach in identifying serious causes is to take a careful and detailed history. It is recommended to take detailed medical and ocular history including any ocular trauma, ocular sur-

gery, contact lens wear, drugs, and hereditary conditions. First, it is important to make a detailed slit-lamp examination to exclude any ocular trauma and other ocular causes that may be caused by SCH.

The systemic evaluation is important after ocular factors are knocked out. Blood pressure should be measured routinely, particularly in elderly patients with SCH. Necessary investigations should be made in terms of bleeding disorders in recurrent cases. The cases with persistent or recurrent SCH must be referred to an internal medicine clinic for detailed systemic evaluation. Patients should be informed about the clinical presentation and symptoms of SCH.

Conflicts of Interest

The authors declare that they have no competing interests.

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