



The Prevalence of Eyelid Myokymia in Medical Students

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Authors' contributions

This work was carried out in collaboration between all authors. All authors have made substantial contributions to conception and design of the study. Authors SH and IK were involved in the data acquisition while authors SH and JZ participated in the data interpretation. All authors were involved in literature search and writing the article. Authors SH and JZ drafted the manuscript and made the critical revision. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To determine the prevalence and factors associated with eyelid myokymia (EM) in students attending Medical faculty.

Study Design: Cross sectional survey.

Place and Duration of Study: Medical faculty University of Tuzla and Department of Ophthalmology University Clinical Centre Tuzla, between December 2015. and January 2016.

Methodology: We included 100 medical students, randomly selected by staff employed in student service of Medical faculty, from the list of students registered for different exams in December 2015. Before the survey all participants were informed about the signs and presentations of eyelid twitching and its possible significance. The survey was performed before and after the exams with students of third, fourth and fifth study year. It consisted of 18 questions regarding the presence of eyelid twitch, and influence of various factors on its frequency and intensity.

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Results: Forty four percent of students had signs of eyelid myokimia (EM) during short period of 7 days before the exams. Female students were more likely to have EM than male students (OR 2.46:1). Students of fifth study year were at more risk for development of EM than students of fourth and third year respectively (OR 1:1.5:2.67). Energy drinks consuming was a significant predictor for EM occurrence ($P=.046$). Students who reported to have reduced sleep during exam preparation have significantly more often symptoms of EM ($P=.014$) as well as individuals who claim to have been exposed to a greater amount of stress ($P=.042$).

Conclusion: Eyelid myokymia is relatively common phenomenon among students of Medical faculty. It has higher incidence before exams, during the period of intense studying.

Keywords: Eyelid twitching; stress; eyelid myokymia; blepharospasm.

1. INTRODUCTION

Myokymia consists of involuntary, fine and undulating fascicular contractions that spread across the affected striated muscle [1,2]. Eyelid myokymia (EM), also called benign eyelid twitch, is a fine fasciculation (tiny muscle contractions) generally affecting one eyelid (more often a lower eyelid, but upper eyelids as well). It does not involve upper and lower eyelids on the same side, or eyelids on both side of the face at the same time and rarely involve more than one eyelid at different times. Twitching is episodic, lasting seconds to hours over minutes to months, but always eventually resolves on its own [3].

Unlike facial myokymias, those limited to the eyelid only tend to appear in healthy young subjects [2,4]. They present in healthy subjects with no associated diseases and are associated with stress, fatigue, exercise and excessive caffeine use [1,2,4,5]. Although benign in its nature, EM can be one of signs of systemic disorders such as multiple sclerosis [2,6], subarachnoid haemorrhage [7], intracranial tumours [8], cysticercosis [9], multiple system atrophy and Guillain-Barré syndrome [1,2,10,11]. Eyelid twitching is also a sign of other more localized disorders, such as benign essential blepharospasm, Meige syndrome, tardive dyskinesia, hemifacial spasm, facial nerve injury with aberrant regeneration, blepharoptosis and secondary blepharospasm [3]. It is important to note, that EM can be associated with use of several drugs, such as flunarazine, clozapine and topiramate [4].

The purpose of this survey was to determine the prevalence and factors associated with EM in students attending Medical Faculty University of Tuzla.

2. MATERIALS AND METHODS

We performed a cross sectional survey on 100 medical students of Medical faculty University of Tuzla. The students were randomly selected by staff employed in student service of Medical faculty, from the list of students registered for different exams in December 2015. The survey was performed before and after the exams in students of third, fourth and fifth study year. All students included in this survey were interviewed for previous history of possible systemic, especially neurologic or chronic ophthalmic diseases, in order to be considered as healthy subjects. Students with previous history of neurologic or any other systemic disorders were excluded from this survey. Also students with previous history of any chronic eye disease or trauma were also excluded from this survey.

Before the survey all participants were informed about the signs and presentations of eyelid twitching and its possible significance. The survey consisted of 18 questions regarding the presence of eyelid twitch, and influence of various factors on its frequency and intensity, such as: Age, gender, year and duration of study, sleep deprivation, smoking status, usage of caffeine and different energy drinks, intensity of learning and preparation for the exam, number and difficulty of the exams they are taking and overall stress they are exposed during the study. To assess the level of stress and anxiety, we used The Westside Test Anxiety Scale (WTAS). The Westside Test Anxiety Scale is brief screening instrument meant to identify students with anxiety impairments. The scale is comprised of ten items, and takes about five to eight minutes to administer. It combines six items assessing performance impairment, four items on worry and dread, and no items on physiological over-arousal. The students are asked to rate on 5 point scale, how true is each

of the 10 statements. The sum of all 10 questions is divided by 10 and provides average grade of stress and anxiety impairment [12].

Statistical analyses were performed using Stata Statistical Software, version 13.0 (StataCorp LP, College Station, Texas, USA) and SPSS for Windows, version 20.0 (IBM-SPSS, Chicago, IL, USA). Confidence intervals and *P* values were calculated at the *P* < 0.05 level. Pairwise interactions between regression model variables were associated simultaneously using a Wald F test and considered significant at *P* < 0.10 level. The current survey was approved by the Medical faculty authorities and adhered to the tenets of the Declaration of Helsinki. Informed consent was obtained from all participants included in this survey.

3. RESULTS AND DISCUSSION

3.1 Results

This survey included 100 students of Medical faculty University of Tuzla. The survey participants were: 50 students of third, 30 students of fourth and 20 students of fifth study year. Average age of participants was 22.92±2.45 years (range 20 to 34), while average duration of Medical faculty studying was 4.99±2.83 years (range 3 to 15 years). There were 72 (72%) of female and 28 (28%) of male students equally distributed over the studying years (*P* = .672). Of 100 included students 44 (44%) had present EM during short period of 7 days before the exams. Thirty seven out of 72 (51.4%) female students and 7 out of 28 (25%) male students had positive signs of EM, where female students were significantly more likely to have EM than male students (*P* = .05; OR: 2.46:1).

The prevalence of EM in students of third, fourth and fifth study year was 28%, 50% and 75% respectively. Students of fifth study year were at more risk for development of EM than students of fourth and third year (*P* = .01; OR: 1: 1.5: 2.67) (Diagram 1.). Length of studying was not statistically significant predictor for EM development (*P* = .372). Side, right of left, was not correlated with EM development (*P* = .246), while previous history of allergic conjunctivitis was correlated (*P* = .01). Regular distributed learning and more intensive (campaign) learning were not significant predictors for EM occurrence either (*P* = .505). Seventy seven per cent of students stated they regularly drink coffee and

16% were smokers. Coffee intake and smoking status were not statistically correlated with EM development (*P* = .310 and *P* = 0.568). However, 39% of students consume energy drinks, which was a significant predictor for EM occurrence (*P* = .046). Alcohol intake during preparation and after the exams was present in 52% of students and was not correlated with signs of EM development (*P* = .065).

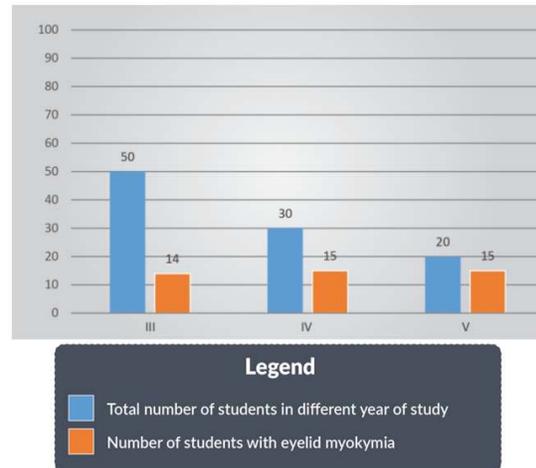


Diagram 1. The prevalence of EM in students of third, fourth and fifth study year

The average value of WTAS before the exams was 3.98±0.95 while after the exams it was 2.43±0.99. Before the exams 71 (71%) of students had extremely high anxiety, while after the exams this number reduced to 12 (12%). Subjective evaluation of stress, to which students of Medical faculty are exposed, showed that students who claim to have been exposed to a greater amount of stress have more often symptoms of EM (*P* = .042). Additionally, students who reported to have reduced sleeping during exam preparation have significantly more often EM occurrence (*P* = .014).

After finishing exams and a short break, out of 44% of students with earlier positive EM symptoms, 10% had decreased incidence of twitching, while in 34% of students it completely disappeared. Symptom reduction was not related to participants gender (*P* = .553), age (*P* = .103), year of study (*P* = .101), duration of studying (*P* = .342), side of EM (*P* = .423), campaign learning (*P* = .687), coffee intake (*P* = .303), smoking status (*P* = .585), energy drink consuming (*P* = .452), alcohol intake (*P* = .153), subjective stress assessment (*P* = .218) and sleeping reduction (*P* = .71).

3.2 Discussion

The present survey shows that 44% of students attending third, fourth and fifth year of Medical faculty have certain signs of EM. Female students have 2.6 times more chances for developing EM symptoms than males. Other local factors, such as previous history of allergic conjunctivitis, as well as factors related to behaviour and habits, such as consuming of energy drinks, are related to EM occurrence. Advancement of studying, as well as sleep deprivation and self-assessed higher level of stress, are also positive predictors for EM development. On the other side, EM reduction after the exams is not statistically correlated to any of the predisposing factors for its development. Cessation of exam anticipation together with reduction of learning activities, probably reduce the amount of stress, and can be considered as a factors for EM waning. In our survey, after short brake of 7 days, with return to regular daily activities, EM frequency reduces and in most cases completely disappears.

Eyelid myokymia is regularly seen in healthy young subjects with no associated diseases and is associated with stress, fatigue, exercise, and excessive caffeine use [1,2,4,5]. Stress is an important factor in the educational process, and teaching together with learning are stressful processes [13]. The prevalence and level of unfavourable stress and depression during medical training is significantly higher than before the onset medical training [14]. Medical students are more anxious than general population, with prevalences of 7.7 - 65.5% for anxiety, 6.0 - 66.5% for depression and 12.2 - 96.7% for psychological distress [15]. The relationship between teachers and students is an effective factor in all dimensions of clinical education stressors [13]. Results of this survey are in accordance with these findings, with emphasis on reduced sleeping and energy drink consuming as factors that enhance the effect of stress which students are exposed during exam preparation. Eyelid myokymia prevalence of 44% is relatively high, but it is difficult to determine the absolute value of these results due to lack of data from other studies which could be comparable. These data suggest that more research is needed to explore the potential causal links between EM, stress and depression during medical faculty training.

When taking into account symptoms of twitching, man has to be aware that benign eyelid myokymia (eyelid twitching) can also be a sign of other more serious disorders. Benign essential blepharospasm may also start as pronounced eyelid twitching, with sudden (overnight) or more insidious onset (starting as a "twitch" in one eyelid or spasms of both the upper and lower eyelids on one side). This onset variability may sometimes pose considerable confusion early on in the disorder [3]. Other clinical entities with much more serious clinical presentation and prognosis include: Meige syndrome, tardive dyskinesia, hemifacial spasm, facial nerve injury with aberrant regeneration, blepharoptosis and secondary blepharospasm [3]. These disorders include eyelid twitching with simultaneous involuntary spasms or writhing movements of the mid-face, and possibly extending down into the neck, writhing movements of the tongue, mouth, or lips in isolation [3]. Treatment options of essential blepharospasm and hemifacial spasm, as well as other twitching disorders, include more options where most recent studies provide sufficient evidence for the safety profile of AbobotulinumtoxinA for both, blepharospasm and hemifacial spasm [16].

Eyelid twitches are rarely considered to be serious health problem that requires medical treatment, but certain signs need to alert one to see a doctor: if an eye is red, eyelid is swollen, or has an unusual discharge (eyelid completely closes each time), upper eyelid is drooping, eyelid twitching continues for several weeks even months, eyelid twitching is more frequent than usual and occur on both sides of the face and if the twitching begins affecting parts of the whole face. These signs need to be evaluated by a medical professional in order to determine possible need for further systemic investigation [17].

This study has also certain limitations regarded to subjective evaluation and reporting of EM symptoms and overall stress. However, our participants are medical students, which all had been informed about EM symptoms and presentation before taking the survey, in order to minimise the risk of over-reporting the EM symptoms. Nevertheless, this is small cohort of 100 students, and we included only 20% of whole student population from third, fourth and fifth study year. On the other side, this is a first survey of this kind in our region that provides certain information for somatic

presentation of stress in medical students. Further research is needed in order to acquire adequate information about EM in medical students and its correlation with behavioural factors as well as possible long term consequences for general health.

4. CONCLUSION

An eyelid myokymia is relatively common phenomenon among students of Medical faculty. It has higher incidence before exams, during the period of intense studying. Female students were generally more frequently affected, and the incidence of twitching was increasing with advancement of studying in both male and female students. Eyelid twitches are rarely serious enough to require medical treatment, but if they are frequent and occur on both sides of the face it is recommended to make a detailed ophthalmic and neurological examination.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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