



Research Article

www.ijrap.net



A PILOT STUDY TO ASSESS THE EFFICACY OF MUD EYE PACK IN ASTHENOPIA

Amal S Chandran¹, Anusree Dileep², Azad Bose³, Delvin T Robin^{2*}

¹PG Scholar, Department of Swasthavritta (Social and Preventive Medicine), Amrita School of Ayurveda, Amritapuri, India

²Associate Professor, Department of Swasthavritta (Social and Preventive Medicine), Amrita School of Ayurveda, Amritapuri, India

³Naturopathy and Yoga Consultant, Department of Swasthavritta (Social and Preventive Medicine), Amrita School of Ayurveda, Amritapuri, India

Received on: 04/04/18 Accepted on: 14/05/18

***Corresponding author**

E-mail: delvintroby@gmail.com

DOI: 10.7897/2277-4343.09390

ABSTRACT

Modern life style diseases are so called psychosomatic and strain related diseases. Asthenopia or eye strain is one such prominent public health issue prevalent in college campuses. Long sessions without rest and addiction to visual medias like computers and tablets increases the incidence of asthenopia. Preventive measures like proper rest is the only effective treatment for asthenopia. An eye mud pack therapy gives relaxation to the eyes and also is safe, easy to administer, cost effective and can be done at home itself. But so far, no studies have been done to assess the efficacy of eye mud pack in asthenopia. So, a pilot study was carried out to assess the efficacy of mud pack in reducing the severity of asthenopia. A single group study consisting of total 10 volunteers with symptoms of ocular asthenopia was taken. The group received mud pack for 7 days. The reduction or improvement in the severity of asthenopia was assessed at baseline and after 7 days of mud pack using *park et al* questionnaire. The results of analysis for “tired eyes” (p = 0.005), “sore/aching eyes” (p = 0.005), “irritated eyes” (p = 0.005), “watery eyes” (p = 0.005), “dry eyes” (p = 0.005), “eye strain” (p = 0.005), “burning eyes” (p=0.005) “blurred vision” (p = 0.005), focussing difficulty (p=0.01) “visual discomfort” (p = 0.005). TAS (p=0.005) which was found to be significant. These results are encouraging that mud pack which is having antioxidants, analgesics, anti-inflammatory properties is a cost effective, efficacious and simple treatment modality in reducing the symptoms of asthenopia.

Keywords: Eye strain, peloid therapy, naturopathic medicine, fangothrapy

INTRODUCTION

Modern life style is fast becoming a ticking health time bomb. Spending too much time on one posture could be seriously damaging our health. Those prolonged periods of physical inactivity increase the risk of eye strain or asthenopia and cause a long list of other condition including heart disease, diabetes, cancer, muscular and back issues, depression and even dementia. Asthenopia or eye strain is a common condition in adults and can be defined as a subjective sensation of visual fatigue, eye weakness. Imbalance of extraocular muscles, uncorrected refractive errors, improper lighting and accommodative impairment can lead to asthenopia. The different symptoms like itching, watery eyes, double vision, sore eyes, blurred vision, dry eye sensation, headache and redness are associated with the manifestation of the disease¹.

Development in science and technology are hallmarks of a country's progress and development. Computer is the most versatile considering its reach and popularity. But too much addiction to it will adversely affect the mental and physical health. According to analysts, there is a worldwide exponential rise in the number of computer and tablet users especially in china, India and Russia. The number of users is expected to reach 1 billion by 2010. In countries like USA asthenopia has become a significant problem as one and half times visual display terminal (VDT) users are expressing complaints regarding this problem to patients who carry out normal work in office. During routine examinations, eye strain and headache due to the usage of computer have been reported to about 10-15%. The percentage of

persons suffering from eye discomfort among VDT workers is quite alarming and, in some states, its nearly 50%. The yearly costs may approach \$2 billion for diagnosing and treating these issues².

It has become a significant public health issue coming up in college campuses. Personal computers and life style changes are the main cause of the increase in the rate of these complaints. These can not only limit personal activities but also fasten the development of age related eye diseases³.

In the diagnosis of dry eye syndrome asthenopia is considered as one of the important symptom. Computer vision syndrome (CVS) is the asthenopia caused due to computer screen/VDT. Visual, ocular and musculoskeletal discomfort are the symptoms that constitute CVS. Due to continuous VDT watching blink rate considerably decreases and there is increase in convergence and accommodation activities, which lead to dryness of eye and asthenopia⁴. During work frequent breaks are recommended as long sessions without proper rest increases the incidence of asthenopia⁵. For the management of CVS various treatment methods have been suggested which includes Ayurveda medicine, refractive error correction, visual ergonomics, instillation of artificial tears, combination of specific body posture, breathing and mental control. There is no reliable studies regarding the efficacy of above said treatments⁴.

Lindlahr says that violation of nature's law is the primary cause of disease. Due to the Nature's law violation, vitality will be lowered, blood and lymph composition will become abnormal

and morbid materials, poisons and waste matter gets accumulated in the body. The universal laws of nature have to be obeyed so as to prevent and manage disorders. Natural methods include returning to nature by adopting a normal and natural way of drinking, eating, resting, bathing etc, the appropriate use of *panchamahabhootas* (Earth, Water, Fire, Air, Space)⁶.

Earth which is considered as an important treatment modality in naturopathy which has got a substantial influence on human body. Mud therapy is a cost effective, efficacious and simple treatment modality that can be utilized in treatment⁷.

Mud bath and mud pack are the two forms in which mud therapy can be used. Mud pack are those which are applied frequently to a particular portion and mud bath is the application of mud over the entire body except head. Among this mud pack is said to be useful for persons who sit in front of the computer for long hours⁸.

METHODS

Study Design and Population

Students of Amrita School of Ayurveda of age 20- 30 years were selected for the study. The asthenopia symptoms was assessed using “Park et al” questionnaire. Present study was carried out in accordance with ethical principles by following International

conference of Harmonization-Good Clinical Practices Guidelines (ICH-GCP).

Ophthalmic Screening Test

A complete examination of the visual function was performed for the subjects. Test like cover test, refraction test, measurement of visual acuity, near point of convergence and heterophoria was performed. Snellen’s chart which was kept at a distance of 6m was utilised to assess the visual acuity and refractive status of each eye separately. Auto-refractometer was utilised to obtain refraction. In case of anisometropia correction was maintained to 6/6. Questionnaire was utilized to assess the hours of usage of VDT like laptops, smart phones and the severity of asthenopia. Before the subjects were enrolled into the study consent was obtained. The study was started on May 2017 by screening the first volunteer and the study was concluded on August 2017.

10 eligible volunteers were included after screening 13 volunteers. Healthy volunteers in the age group of 20- 30 years who had more than two hours of daily usage of VDT was included in the study. The study group received mud pack for 7 days. The subjects who consumed medications that had effect on ocular effects like anticholinergics, antihistamines, ginko biloba extracts and anti-thyroid drugs were excluded from the study⁴. The subjects were allotted after passing the screening tests.

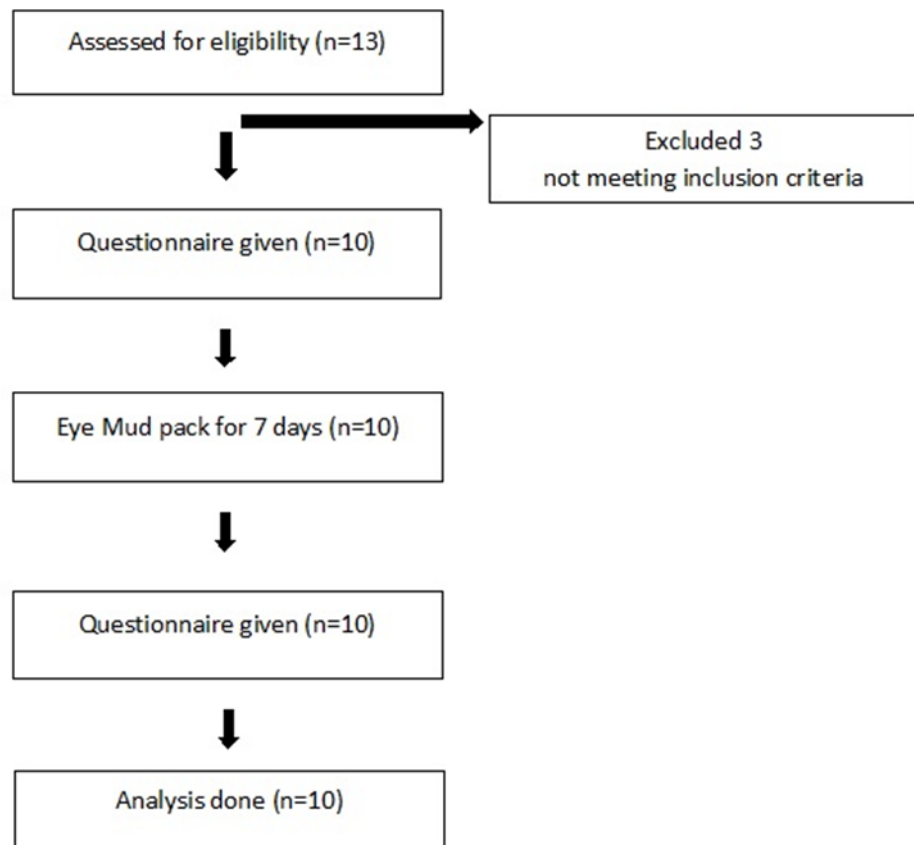


Figure 1: CONSORT flow chart

Preparation of Mud

Mud therapy is a simple, cost effective treatment modality widely used in Naturopathy. Mud which is free from contamination of chemical manures, stone pieces and clean should be taken from a depth of 122 to 153 cm from the surface of the ground. Here, in the study mud was taken from the garden of Amrita School of Ayurveda, Kollam, Kerala, India and was dried in sun rays, powdered and sieved to separate stones, grass particles and other impurities. For proper sterilization of the mud it was also well heated⁷.

Mudpack for Eyes

A half inch thick layer of mud soaked in water was spread and made it to a pack typically 9 in X 6 in which covers the eyes completely. It should be kept on the eyes for a duration of 20 -30 minutes. Mud eye pack which has the potential to relax the eyes and it is supposed to be good for persons who sit long duration of time in front of the computer. Mud eye pack is also found to be effective in reducing the irritation, itching, conjunctivitis, correcting refractive errors, glaucoma, allergic conditions and haemorrhage of the eye ball⁸.

Outcome Measures

The evaluation of Asthenopia was done by using by using “Park et al” questionnaire. Pre-and post-answering of the questionnaire which contained 10 questions should be done by the participants. Diurnal variation, body condition and environmental factors like room temperature, humidity and illumination has influence on the severity of asthenopia^{3,9}.

Statistical Analysis

Information on demographic features, perceived health status, sleep, eye hygiene was assessed by using questionnaire.

A checklist consisting of subjective symptoms of asthenopia were adopted: tired eyes, sore/aching eyes, irritated eyes, watery eyes, dry eyes, eye strain, burning eyes, blurred vision, focussing difficulty, visual discomfort, TAS. Statistical tests was performed using Wilcoxon signed rank test.

The age group selected was between 20- 30 years. 90% subjects were females. All the subjects were of middle class family. Duration of sleep for 60% were between 5 to 6 hours and others were 7-8 hours.

RESULTS

Table 1: Wilcoxon signed rank test was performed for pre- post comparison of variables

Symptom	Z	P
Tired eyes	-2.803	0.005
Sore/aching eyes	-2.803	0.005
Irritated eyes	-2.803	0.005
Watery eyes	-2.803	0.005
Dry eye	-2.803	0.005
Eye strain	-2.803	0.005
Hot/burning eyes	-2.803	0.005
Blurred vision	-2.803	0.005
Difficult focusing	-2.52	0.01
Visual discomfort	-2.803	0.005
TAS	-2.803	0.005

The result is significant only if P value is <0.05.

DISCUSSION

The recent advancement and usage of VDT has become a serious health concern. In order to focus on VDT for longer duration of time, continuous accommodation is necessary which in turn leads to fatigue of eyes which finally leads to computer vision syndrome (CVS). Studies shows that CVS develops in almost 64-90% of the persons using computers⁴. Studies shows that in asthenopia females were affected in higher proportion compared to males¹⁰. During computer work there is significant decrease in blink rate which negatively correlates with eye discomfort score¹¹. Studies reveals that there is significant increase in eye discomfort when computer is used more than 4 hours¹². A recent study demonstrated that more accommodation and convergence was required for watching mobiles than in reading¹³.

In this study, the authors found that mud pack for a week significantly alleviated the symptoms of asthenopia. Further studies should be carried out to investigate the mechanism of mud eye pack.

Probable mechanism mud therapy: The exact mechanism is not yet understood. Neurological, rheumatologic (osteoarthritis), cardiovascular disorders, gynaecological conditions (inflammatory and menstrual cycle disorders) and skin pathology

(eczema, acne, psoriasis, dermatitis) have been successfully treated using mud therapy¹⁴. As a result of mud application there is increase in electrical conductance in the membrane, phenomenon of absorption increases, activation of enzyme, hormone, hyperaemia and hydropoitic glands occurs. Mud therapy also increase the temperature of skin, immunity, neurotransmission, water electrolyte balance and also has impact on cardiovascular system. Mud therapy was found to be very much relaxing for all the patients. Studies reveals that mud has therapy has anti-inflammatory and influence in anti-oxidant system which is very much helpful in reducing the symptoms of asthenopia^{4,14}.

Researches shows that at the epithelial level there is existence of ionic exchange between the human organism and therapeutic. Mud can be used in the management of several degenerative diseases due to the presence of organic and mineral ingredients. Both local thermal effects and chemical components play an important role in the effects of mud pack. In knee OA mud pack treatment showed significant improvement in pain and functional status of patients. There are over 50 compounds present in mud which have are having analgesics, anti-inflammatory, antioxidant, immune stimulant, detoxicant, membrane regulators, antineoplastic and hormone biological activity in their isolated forms¹⁵. The colony forming microorganism was found to be low

in mud in a test using conventional bacteriological media¹⁶. This might be the reason by which the whitish discharge which was frequently present was reduced after eye pack application.

A unique property of mud is that it can absorb heat and toxins from the body. Mud not only dissolves the toxins inside the body but also transforms them into such a state by which it can be eliminated from the body. It helps to reduce the rigidity of muscles; the hard tissues get softened and hard fatty glands within or over the body gets dissolved. From the very moment of its application the patient observes relief from the symptoms. Mud gets hot sooner after application if there is excess amount of toxins in the body. In such condition another mud pack should be applied over the same site. Mud can be employed in ailments like fever, piles, constipation, insomnia, dysentery, headache, high blood pressure, diarrhoea, anxiety, etc. besides its local uses⁴.

The study had several limitations. Questionnaires were used to evaluate the effect of mud therapy. Daily physical and mental condition during the time of answering could affect the responses. There is lack of an established objective method to quantify asthenopia⁴. Another limitation of the study is that the mud pack employed in our study is short period of time, that is for a week. Patients were not given treatment under controlled condition. Some were using VDT during the treatment period.

CONCLUSION

As of now, proper rest is only effective treatment for reducing the symptoms of asthenopia. But it cannot be applied in today's life due to the busy schedule of the people. Asthenopia is one of the emerging problems in college campuses. Mud pack which contains antioxidants, analgesics, anti-inflammatory properties is a cost effective, efficacious treatment modality which can be employed in reducing the symptoms of asthenopia.

ACKNOWLEDGMENTS

Authors are thankful to Dr Vandana Rani (Professor, Department of Swasthavritam, Amrita School of Ayurveda, Amritapuri, India), Dr. Sreeja Kaimal V (Department of Rasashastra and Bhaishajya Kalpana, Amrita School of Ayurveda, Amritapuri, India), Dr Cijith Sredhar (BNYS- Yoga and Naturopathy consultant), Dr Aswini B N and Dr. Jayakrishnan A (Department of Shalakyta Tantra, Amrita School of Ayurveda, Amritapuri, India) for their valuable support.

REFERENCES

1. Vilela, M. A. P., Pellanda, L. C., Fassa, A. G. & Castagno, V. D. Prevalence of asthenopia in children: a systematic review with meta-analysis. *Jornal de Pediatria* 91, 320–325 (2015).
2. Bhandari, D. J., Choudhary, S. & Doshi, V. G. A community-based study of asthenopia in computer

- operators. *Indian journal of ophthalmology* 56, 51–5 (2008).
3. Han, C.-C. et al. Prevalence of asthenopia and its risk factors in Chinese college students. *International journal of ophthalmology* 6, 718–22 (2013).
4. Park, C. Y. et al. The effect of *Vaccinium uliginosum* extract on tablet computer-induced asthenopia: randomized placebo-controlled study. *BMC complementary and alternative medicine* 16, 296 (2016).
5. Bali, J., Navin, N. & Thakur, B. R. Computer vision syndrome: a study of the knowledge, attitudes and practices in Indian ophthalmologists. *Indian journal of ophthalmology* 55, 289–94 (2007).
6. Homeop Ayurv, J. & Rastogi, R. Homeopathy & Ayurvedic Medicine Current Approaches of Research in Naturopathy: How Far is its Evidence Base? Central Council for Research in Yoga & Naturopathy *J Homeop Ayurv Med* 1, (2012).
7. Rastogi, R. Therapeutic uses of Mud therapy in Naturopathy. *Indian Journal of Traditional Knowledge* 11, 556–559 (2012).
8. Saraswathi K N & Prof, A. MUD THERAPY. http://www.jsscon.org/ejournal/pdf/vol10feb2015/mud_the_rapy_Saraswathi.pdf
9. Wolska, A. & Świtula, M. Luminance of the Surround and Visual Fatigue of VDT Operators. *International Journal of Occupational Safety and Ergonomics* 5, 553–580 (1999).
10. Bhandari, D. J., Choudhary, S. & Doshi, V. G. A community-based study of asthenopia in computer operators. *Indian journal of ophthalmology* 56, 51–5 (2008).
11. Portello, J. K., Rosenfield, M. & Chu, C. A. Blink Rate, Incomplete Blinks and Computer Vision Syndrome. *Optometry and Vision Science* 90, 482–487 (2013).
12. Logaraj, M., Madhupriya, V. & Hegde, S. Computer vision syndrome and associated factors among medical and engineering students in Chennai. *Annals of Medical and Health Sciences Research* 4, 179 (2014).
13. Bababekova, Y., Rosenfield, M., Hue, J. E. & Huang, R. R. Font Size and Viewing Distance of Handheld Smart Phones. *Optometry and Vision Science* 88, 795–797 (2011).
14. Chadzopulu A, Adraniotis J & Theodosopoulou E. The therapeutic effects of mud. *Progress in Health Sciences Poland Prog Health Sci* 1, 132–136 (2011).
15. Suárez, M. et al. Identification of Organic Compounds in San Diego de los Baños Peloid (Pinar del Río, Cuba). *The Journal of Alternative and Complementary Medicine* 17, 155–165 (2011).
16. Ma'or, Z. et al. Antimicrobial properties of Dead Sea black mineral mud. *International Journal of Dermatology* 45, 504–511 (2006).

Cite this article as:

Amal S Chandran et al. A pilot study to assess the efficacy of mud eye pack in asthenopia. *Int. J. Res. Ayurveda Pharm.* 2018;9(3):189-192 <http://dx.doi.org/10.7897/2277-4343.09390>

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAP is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAP cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of IJRAP editor or editorial board members.