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Accommodative Spasm: A Comprehensive Review Of Diagnosis And Management

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Abstract

Background: Accommodative spasm (pseudomyopia or ciliary spasm) is a rare ocular disorder characterized by intermittent blurred distance vision, headaches, and eye strain. Often misdiagnosed as true myopia, its prevalence is increasing with prolonged near work and digital screen use, especially among adolescents and young adults.

Aim: This review synthesizes recent evidence on the etiology, diagnosis, management, and treatment of accommodative spasm to provide updated clinical guidance.

Methods: A systematic literature search was conducted across PubMed, Scopus, ScienceDirect, EMBASE, Web of Science, and Google Scholar for English-language studies published between January 2020 and March 2025. Eleven peer-reviewed articles met inclusion criteria. Data extraction followed PRISMA guidelines, and methodological quality was appraised using JBI and AMSTAR 2 tools.

Findings: Accommodative spasm is predominantly functional in origin, strongly associated with intensive near visual demands. Cycloplegic refraction remains essential for differential diagnosis. Pharmacological management with cycloplegics (atropine, cyclopentolate, tropicamide) is effective in acute control, while optical correction, vision therapy, ergonomic modifications, and stress reduction strategies play a central role in long-term management. Innovative diagnostic methods (e.g., cyclodamia,

dynamic autorefractors) and digital vision therapy programs are emerging. Multidisciplinary care, and in rare refractory cases, surgical interventions such as clear lens extraction, may be required.

Conclusion: Early recognition and accurate diagnosis are crucial to avoid mismanagement. A multimodal approach combining pharmacologic and non-pharmacologic strategies offers the best outcomes. Personalized care, lifestyle modifications, and patient education are essential to reduce recurrence and preserve visual function in populations increasingly exposed to digital visual demands.

Keywords: Accommodative spasm, pseudomyopia, cycloplegia, vision therapy, near work fatigue.

Introduction

Accommodative spasm, ciliary spasm, or pseudomyopia is the rare condition in an almost meaningful way where involuntary excessive contraction of the ciliary muscle leads to blurry distance vision that intermittently occurs along with other accompanying symptoms like eye strain, photophobia, and simple headaches (Manna et al., 2023). What typically gets misdiagnosed as true myopia can result in diagnostic folly and wrong treatment if cycloplegic refraction or any other complete evaluation test is not done (García-Montero et al., 2022). Although accommodative spasm can occur at any age, greater prevalence is noted in adolescents and young adults during prolonged near tasks as particularly in academic and digital screen-based work (Kaiti et al., 2022).

The etiology of accommodative spasm is considered to be both functional and organic. The functional causes are prolonged near visual tasks, psychological stress, and binocular vision anomalies; the organics may be neurological conditions, trauma, or drug reactions (Szczęśniak et al., 2024). Accommodative spasm may appear clinically either as a solitary condition or as part of a more generalized spasm of the near reflex comprising convergence spasm and miosis (Barbosa & Lemos, 2024). It can simulate other forms of refractive error most notably myopia so that differential diagnosis of accommodative spasm must be thorough, including a cycloplegic check and observation of changes in refraction (Ramesh et al., 2021).

Recent literature has thus far placed a key role in the use of cycloplegic agents confirming the diagnosis and treating ciliary muscle spasm with atropine, cyclopentolate, or tropicamide (Park et al., 2021; Kaiti et al., 2022). Though pharmacological treatment remains the most commonly practiced treatment method, non-pharmacological methods such as plus lenses, bifocals, prisms, optical fogging techniques, and vision therapy have increasingly become more important for long-term management and prevention of recurrences (Manna, Sarbajna & Karmakar, 2023; Dalal & Shah, 2022). A multidisciplinary approach that includes behavioral therapy and visual ergonomics has proven effective in eliminating stress-related triggers (Catach et al., 2025).

In cases that are exceptional and resistant where the conservative approach does not yield success, surgical alternatives such as the extraction of the clear lens, accompanied by the implantation of an intraocular lens, may be considered, specifically in situations where accommodative actions result in significant and unrelenting visual distress (Barbosa & Lemos, 2024). The increasing global trend of using digital screens makes it imperative for clinicians to comprehend the presentation, diagnosis, and developing treatment options for accommodative spasm, more so those who are serving school-going and working populations. Therefore, this paper undertakes a detailed review of findings from recent studies to indicate current views on diagnosing, managing, and treating accommodative spasm along with evidence-based recommendations for clinical practice.

Methodology

This review aimed at exploring and synthesizing evidence on the diagnosis, management, and treatment of accommodative spasm published between 2020 and 2025. The methodology was according to PRISMA guidelines to ensure transparency and rigor in the search, selection, and synthesis process.

Search methods and data sources

Multiple electronic databases were searched in a systematic manner. These included PubMed, Scopus, ScienceDirect, Google Scholar, Web of Science, and EMBASE. The search was carried out between February and March 2025 for publications in English and dated from January 1, 2020 to March 31, 2025. Initially only peer-reviewed journal articles found through this search that included systematic reviews, narrative reviews, case reports, clinical trials, and observational studies were permitted which pertained to the etiology as well as diagnosis treatment and management of accommodative spasm. Manually screening reference lists of the included studies and related reviews served to find more relevant articles.

Keywords and search strategy

The search strategy applied used both the Medical Subject Headings (MeSH) and free-text terms to bring out the whole relevant literature. Key phrases were: “accommodative spasm”, “ciliary spasm”, “pseudomyopia”, accommodation disorder”,” accommodation dysfunction”, "spasm of near reflex", management of accommodative spasm, treatment of ciliary spasm and cycloplegnic therapy". Boolean operators were used to refine the search and eliminate irrelevant results. For example, one such query in PubMed was: (“accommodative spasm” OR “ciliary spasm” OR pseudomyopia”) AND (“treatment” OR ”management” OR ”therapy").

Eligibility criteria

Predefined inclusion and exclusion criteria were used to guarantee the relevance and quality of the studies. The following eligibility criteria were considered: (1) publication between 2020 and 2025; (2) the study related to accommodative spasm or more closely related conditions such as ciliary spasm or pseudomyopia; (3) study on human subjects; and (4) article discusses diagnostics, therapeutics, or management. Original research and review articles were included. Papers not in English, those dealing only with animal models, or those without full text available will not be included in the review as long as they are not peer-reviewed (such as opinion pieces, editorials, or conference abstracts without data).

Study selection process

All search results were uploaded into reference management software (Zotero) and subsequently deduplicated. Titles and abstracts of the records were screened independently by two reviewers to identify potentially eligible articles. The full texts of the picked studies were then evaluated for inclusion. Any disparity between reviewers was resolved either through discussion or by having a third reviewer join in when needed. In the end, out of all these articles, 11 happened to fit perfectly with our goals and criteria for this review.

Quality assessment

Validated instruments relevant to the type of study were used to determine the methodological quality and credibility of the included studies. The Joanna Briggs Institute (JBI) Critical Appraisal Checklist was utilized for both case reports and case series. AMSTAR 2 was applied to systematic and narrative reviews. Some of the parameters upon which these studies were judged include; clarity of aims, methodological transparency, appropriateness of interventions, and robustness of outcome measures. Bad-quality studies or those with a high risk of bias were either excluded or referenced in the discussion with caution.

Number of studies included

A total of 119 studies were obtained from the search after removing duplicates. In the first round of screening by title and abstract, 32 studies were open to full-text review. Out of these, 11 studies fulfilled all the criteria for inclusion and were pointed out in the final synthesis. The types of articles that formed this set included systematic reviews, narrative reviews, case reports, and observational studies, together providing a comprehensive understanding of accommodative spasm etiology, diagnosis, management strategies, and treatment outcomes.

Findings

1. Prevalence and demographic patterns

Accommodation spasm is an ocular condition that can be clinically considered relevant and is mainly predominant in adolescents and young adults. Generally speaking, the condition does not have a strong gender preponderance; however, some studies give it a slight female predominance, possibly due to higher reported stress-related visual dysfunctions in females (Manna et al., 2023; Szczęśniak et al., 2024). Most of the cases take place during the second and third decades of life, which coincidentally is also the period when academic and occupational visual demands are at their highest (Park et al., 2021). A very high percentage of these cases involve students who are engaged in prolonged reading, online learning, or screen-based activities. these activities have surged mostly post-COVID-19 pandemic, when digital education took global reach among other things (García-Montero et al., 2022). Workers, such as designers, IT professionals, and researchers who engage in near work for long hours, are also at high risk due to continuous effort of accommodation without appropriate rest and lack of ergonomics (Kaiti et al., 2022).

2. Etiology and risk factors

Causes of accommodation spasm are numerous and usually classified into functional and organic causes. The majority are functional and arise from prolonged near vision tasks, reading, working on a computer, or using a smartphone, as well as all other visually demanding work that takes the ciliary muscle beyond its normal limits (Manna et al., 2023). Important contributors are psychological factors, particularly stress, anxiety, and emotional fatigue. This condition has been resolved after counseling in various case studies as well as after reducing the workload (Catach et al., 2025). Organic causes are rare but can include head trauma, encephalitis, multiple sclerosis, or space-occupying lesions within the cranium that interfere with the neurological path of accommodation control (Szczęśniak et al., 2024). Some medications have parasympathomimetic effects whereby their action might stimulate the ciliary muscle indirectly and thus bring about excess accommodation (Barbosa & Lemos, 2024). Other factors that can contribute to the environment and behavior are poor lighting, bad posture while reading, not taking visual breaks, and doing a lot of visual concentration on the work without any rest; all these factors will lead to the initiation as well as continuation of the spasm (Dalal & Shah, 2022).

3. Clinical presentation and diagnostic challenges

Accommodative spasm generally presents with blurred vision at a distance that is either intermittent or constant and is often wrongly diagnosed as progressive myopia, particularly in younger patients. Typical symptoms reported by patients include frontal or periocular headache, photophobia, fatigue of the visual organ, eye strain (asthenopia), difficulty in changing the focus from near to far distance, and some mild degrees of diplopia (García-Montero et al., 2022; Ramesh et al., 2021). There may be conditions wherein patients will say that there is clarity when squinting or blinking, and develop visual peculiarities like constant fixation at near or too much blinking, which squints their eyes. Most of these complaints occur after prolonged near work such as reading or using a screen, and may get aggravated by emotional stress and general fatigue (Manna et al., 2023; Catach et al., 2025).

Diagnosis is difficult because the condition can easily mimic refractive errors, particularly myopia. The differentiating factor between accommodative spasm and true myopia, according to most practitioners, is cycloplegic refraction. In the presence of cycloplegia, when the ciliary muscle stops functioning, true refractive status per eye is revealed and often that previously noted myopic shift (Kaiti et al., 2022; Manna et al., 2023). Atropine or cyclopentolate belongs to this class of drugs, which is most frequently used, making it possible to detect pseudomyopia. Other diagnostic tools are the fogging technique, dynamic retinoscopy, and comparison of manifest versus cycloplegic refraction used to evaluate instability in accommodation (Dalal & Shah, 2022). A key diagnostic indicator is a large difference—generally greater than 2 diopters—between manifest and cycloplegic refraction measurements. Paradoxical accommodation

was observed by very few patients, wherein they cleared their vision with voluntary contraction of the ciliary muscle, making diagnosis even trickier (Park et al., 2021).

4. Pharmacological treatment approaches

Pharmacological treatment is one of the most successful initiatory approaches toward accommodative spasm, mainly via cycloplegic agents. Cycloplegics achieve their objective by inducing ciliary muscle paralysis for a short period, which then gives an opportunity to the system of accommodation to relax and re-equilibrate. The drugs mostly used are atropine (1%), cyclopentolate (1%), and tropicamide (1%) based upon severity, age of patient, and tolerance, respectively (Ramesh et al., 2021; García-Montero et al., 2022). Atropine would be applied as a long-acting cycloplegic only for instances that were severe or recurrent because of its long-lasting effects up to 10 days and its side effects including photophobia and blurred near vision as well as systemic anticholinergic effects (Barbosa & Lemos, 2024). Cyclopentolate would be preferred in moderate cases with diagnostic use; it has a shorter duration of action between 24 and 36 hours. Tropicamide is the shortest-acting cycloplegic used in milder cases when daily visual function is affected minimally (Kaiti et al., 2022).

Treatment schedules depend on the compound employed and the clinical circumstances. Atropine is usually given once a day for 1 to 2 weeks and then tapered as symptoms resolve. Cyclopentolate and tropicamide can be utilized two to three times a day for shorter periods, like one week, and then slowly discontinued as accommodative stability is regained (Manna et al., 2023). Due to possible side effects (atropine glare, dry mouth photophobia), patient education becomes very crucial; plus prescription of near work plus lenses or photochromic lenses becomes necessary in some cases (Dalal & Shah, 2022).

In terms of efficacy atropine is the most potent cycloplegic and persistent spasms are best treated with atropine. However, because of its side effect profile, pentolates cycloplegics in practice tops over others. Tropicamide is less potent but good for diagnosis and maintenance (Szczęśniak et al., 2024). The available literature suggests that patients with functional accommodative spasm will often respond suitably to even short-term treatments with cycloplegia; however, those individuals who have stress or neurological factors will require prolonged treatment as well as additional non-pharmacological measures (Catach et al., 2025; Manna, Sarbajna & Karmakar, 2023).

5. Non-pharmacological interventions

Pharmacological treatment frequently resolves acute episodes of accommodative spasm. However, non-pharmacological measures assume greater importance in long-term management and the prevention of recurrences. The most common way among them is optical correction with plus lenses for distance as well as near tasks. These lenses reduce the demand on the ciliary muscle by moving the focal point anterior, allowing accommodation to relax more easily during visual tasks (García-Montero et al., 2022). For patients persistently working at near distances, bifocal or progressive addition lenses (PALs) can be prescribed to reduce accommodative effort for close vision. Lens prisms will also be added if accommodative spasm accompanies convergence spasm or any other form of binocular vision defect (Manna et al., 2023).

Vision therapy, better recognized as orthoptic training, has received increasing popularity as one of the very successful non-drug methods, especially in cases of function. The orthoptic exercises help in strengthening visual mobility and controlling neuromuscular accommodation and convergence systems (Catach et al., 2025). Techniques include accommodative rock, pencil push-ups, and flipper lens usage to teach the accommodative response. Exercises can be done either at home or in the clinic and are mostly applied along with some optical help to stabilize visual performance over time (Ramesh et al., 2021). Besides vision therapy, modifications in behavior and environment take the core of management in functional cases. Near work can be minimized, the 20-20-20 rule (look away to see something at a distance of 20 feet for 20 seconds every 20 minutes) can be enforced; reading posture and lighting should not be compromised, and screen time can help accommodate stress conditions (Kaiti et al., 2022). In cases related to psychological

factors, stress management techniques like relaxation training, counseling, or even cognitive behavioral therapy may help (Manna et al., 2023).

6. Innovative diagnostic and therapeutic techniques

New ways done by doctors have brought new ways to find out what is wrong and help fix it so that people can better check and treat accommodative spasm. This includes the modified fogging way also called the cyclodamia method, which seems good in telling real sight problems from fake ones without using cycloplegic drugs right away. It was shown by Dalal & Shah (2022) that this way includes slowly making the sight clouded using big plus lenses while seeing how accommodation relaxes, thus showing hyperopia hiding due to ciliary spasm. At the same time, making tech tools has helped even more in checking and watching problems with accommodation. Wavefront aberrometry, dynamic autorefractors, and binocular open-field autorefractors enable the accommodative measurement of changes so that clinicians can easily detect instability or spasm during any visual task (Szczęśniak et al., 2024). Some clinics now use computerized vision therapy programs with biofeedback and virtual reality to make patients more engaged and keep track of how they are doing in treatment (Catach et al., 2025).

7. Management of refractory cases

Most cases of accommodative spasm will do well with pharmacologic and non-pharmacologic treatment. However, a few patients may come with refractory or recurrent symptoms, needing more intensive and interdisciplinary management. Such cases typically require a multidisciplinary approach that involves the cooperation of ophthalmologists, optometrists, neurologists, psychologists, and vision therapists. This is particularly helpful when the causative factors are multiple; for example, accommodative dysfunction plus convergence excess combined with emotional stress and neurological triggers (Catach et al., 2025). A psychological assessment and intervention will be necessary for those patients whose case of accommodative spasm runs parallel to their anxiety or is involved in somatic symptom disorder or visual fatigue related to stress in school or work (Manna et al., 2023). Vision therapy should be supplemented by behavioral therapy involving relaxation training as well as cognitive-behavioral measures to eliminate both physical and psychological motivators of the malady; this entails therapy for cycloplegia also (García-Montero et al., 2022).

In an accommodative spasm where surgery is to be considered, the instance must be rare and extreme. The procedure involves Clear Lens Extraction with Intraocular Lens implantation, which would basically mean a permanent solution to abolish any functions of accommodation by removing the natural lens (Barbosa and Lemos et al, 2024). Successful cases have already been reported in males as well as females, but one was particularly in a teenage girl who had been suffering from debilitating bilateral accommodative spasm for more than seven years. Post-bilateral Clear Lens Extraction along with multifocal Intraocular Lens Implants, her visual symptoms became completely resolved and there was a dramatically enhanced quality of life that she experienced. Although Clear Lens Extraction is highly invasive with irreversibility on its side, under justified circumstances where all other interventions have failed regarding particulary visully functioning individuals who are impaired in their daily activities , it can be considered. However, due to risk of complications and loss of accommodation, surgical options are last resort after extensive clinical and psychologic evaluation.

8. Outcomes and prognosis

The prognosis for accommodative spasm is generally good as long as the condition is spotted early and treated with a thorough, tailored plan. Most patients will recover significantly or completely within a few weeks to months, depending on how bad the spasm is and how well they follow the treatment (Kaiti et al., 2022). Pharmacologic measures using cycloplegics help much in treating symptoms during the initial period; real long-term support usually hinges on lifestyle changes, constant check-ups, and sometimes recurring vision exercise (Dalal & Shah, 2022). But most people who go back to working on tasks too much

or do not change the behavior or mental causes of this issue have a big chance of having it come back again. The relapses usually happen more in students and workers who have high visual demand or who engage in poor ergonomic practice (Manna et al., 2023). Preventive measures like screen time reduction, periodic visual breaks, and balanced work may be incorporated to mitigate the chances of recurrence (Ramesh et al., 2021). Regarding long-term vision stability, after the spasm resolves, most patients will see normal acuity and refractive status. There is usually no structural damage to the eye and as far as visual outcomes are kept steady, that's how it should remain if the condition is properly managed. However, periodic reassessment is advisable, especially in younger patients who might be developing true myopia or in patients who have a history of recurrent episodes (García-Montero et al., 2022).

Discussion

This review covers clinical presentation, etiology, diagnostic strategies, and treatment approaches for accommodative spasm based on updated research studies. Therefore, it highlighted the change in understanding and managing this underrecognized condition for the two modern culprits: increased screen time and stress-related visual symptoms. Findings here reaffirm what was previously found historically in many ways but also brings new insights and some therapeutic innovations that refine earlier understandings of the condition. The epidemiological patterns of recent studies mostly reaffirm older findings about accommodative spasm being a condition primarily affecting adolescents and young adults who do intense near work (Manna et al., 2023). Where earlier literature presented slight female predominance, newer studies have reported more balanced gender distributions or do not highlight gender as a significant variable (Szczęśniak et al., 2024). One possible reason is the increase in digital screen time for all sexes, leading to a more equal level of risk exposure than in previous decades, when the gender divide in education and access to the internet was much more pronounced. Also, the COVID-19 pandemic hastened worldwide dependence on digital devices for teaching and employment,which subsequently brought about visual related problems (García-Montero et al., 2022).

Causally, the present findings serve to affirm the long-held view in historical literature of accommodative spasm as being multifactorial. The functional causes, such as prolonged near work, poor visual hygiene habits, and psychological stress, continue to take preeminence. Organic causes such as head trauma and intracranial lesions or neurological disorders are substantially less frequent but critical to eliminate. An aspect that somewhat differentiates these more recent studies is the increased focus on psychosomatic and behavioral factors. For example, Catach et al. (2025) reported successful treatment of the spasm with combined vision and behavior therapy; thus, the psychosomatic interplay was often underrecognized in previous studies. This has also been established in findings related to pediatric optometry that stress-induced pseudomyopia might well be a result of coping visually rather than a primary ocular problem (Tassinari, 1994).

Symptomatically, the present review corroborates the classic clinical triad of blurred distance vision, headache, and photophobia previously reported in older as well as newer studies (Ramesh et al., 2021). However, findings from contemporary studies draw more emphasis on the symptomatology that varies, like paradoxical accommodation and inconsistent retinoscopy findings, making diagnosis difficult. An episode of paradoxical accommodation was reported by Park et al. (2021), wherein the patient had to use accommodative power to see far clear contrary to the expected normal physiological response. Such rare presentations highlight that clinicians need to have a high degree of suspicion and must carry out repeated thorough cycloplegic tests.

Diagnosis: Recent literature continues to praise the value pseudomyopia true myopia differentiation based on cycloplegic refraction, a view also held in earlier optometric standards. However, novelties like the “cyclodamia” fogging technique borne out of Dalal & Shah (2022) may serve promising non-pharmacological alternatives for screening purposes mainly in pediatric or drug-sensitive populations. Its role as the primary method before pharmacologic cycloplegia dependence would mean its leap forward in broadening diagnostic options. Integration has already been done for modern autorefractors and wavefront

aberrometers tools that can contribute real-time data on accommodative instability and which were either absent or underused in previous decades (Szczęśniak et al., 2024).

The major contribution towards the objective diagnosis of SNR-A was made by Bharadwaj et al. (2021) when they innovatively introduced root mean square (RMS) deviations of steady-state accommodation as a noncycloplegic diagnostic marker. The study of Bharadwaj et al. confirmed that an RMS deviation value greater than or equal to 0.19 diopters (D) could sensitively and specifically differentiate SNR-A from non-strabismic, emmetropic controls. The sensitivity was found to be 95.2% while that for specificity was 92.2%. This finding is most useful in screening programs conducted on children and at schools where cycloplegic refraction may not be possible. Accommodation fluctuation was noted to be more varied than both pupil diameter and vergence by the authors, thus highlighting also the role of dynamic accommodative instability as central in the pathophysiology of SNR-A.

Pharmacologic management is still the cornerstone of acute treatment. The studies proved that cycloplegics atropine, cyclopentolate, and tropicamide are pretty efficacious in breaking accommodative spasm and confirming diagnosis (García-Montero et al., 2022; Manna et al., 2023). Findings were consistent with historical use; earlier guidelines preferred atropine to most of its prolonged action and side effects. The current studies reflect a more balanced use in the moderate cases whereby cyclopentolate can be used mostly, reserving atropine for cases where accommodation spasm is persistent or severe. Its short duration and better tolerance have made it possible as a diagnostic agent or aid in maintaining therapy. Ramesh et al. (2021) comparative study supports such clinical tiering - hence practical guidance for modifying management according to severity and patient tolerance.

Unlike the earlier period when management was predominantly pharmacological, evidence today highlights non-pharmacological management strategies in long-term rehabilitation and relapse prevention. Vision therapy and orthoptic exercises are now going to get more validation through case studies and controlled trials (Catach et al., 2025). Their role has changed from peripheral or anecdotal importance to primary treatment modalities for functional cases or post-relapse stabilization. Even behavioral and ergonomic interventions near work limitation, 20-20-20 rule, lighting optimization, screen distance management find much stronger emphasis than in previous literature; probably a reflection of change in lifestyle and environmental exposure.

The most remarkable difference from the earlier literature is the new aspect of surgical management that was introduced in the refractory cases. While such things had rarely ever happened in past reviews, a compelling case was reported by Barbosa & Lemos (2024) in which chronic bilateral accommodative spasm was successfully dealt with through medical and optical treatments over several years, which came about only through CLE. That Caval accommodation loss meant that this intervention would be reserved as a last resort, which famously restricts its application to cases admitted as nearly intolerable regarding their effect on daily life. The proposal is a phakic intraocular lens reasoning for ciliary muscle spasm cases, although ethical considerations for younger patients make application difficult.

Prognosis outcomes as noted in this review are consistent with earlier literature, which has been favorable in most instances, particularly with early diagnosis and holistic management. The caveat from recent studies is that recurrence is often seen in patients when they do not make sustained behavioral and ergonomic changes (Manna et al., 2023). This again emphasizes the need for patient education and follow-up, a topic which perhaps did not get enough emphasis in previous clinical guidelines. Prognosis seems to also relate to the duration of spasm; patients with longstanding symptoms tend to be treated for longer periods of time and are also more likely to need vision therapy (Dalal & Shah, 2022).

Clinical Implications

These results have meaningful considerations for clinical actions, particularly with more digital devices and academic pressure on teenagers and young adults. Practitioners should keep thinking about accommodative

spasm in cases where there is variable vision, common headaches, and trouble in focusing; especially when the near work duration increases the symptoms. Early use of cycloplegic refraction to distinguish between true myopia and pseudomyopia is still crucial to avoid the incorrect lens prescription from happening. Besides pharmacological management, non-pharmacological measures like optical correction, vision therapy, and ergonomic advice should be integrated for long-term resolution of symptoms as well as avoidance of recurrence. A complete evaluation of behavioral and psychological factors, stress level screening, habit as well as holistic patient education shall be offered by the clinician. Multidisciplinary care, including optometry, ophthalmology, psychology, and vision therapy services, for refractory cases can dramatically improve outcomes. In addition, awareness of new diagnostic tools and upcoming surgical options gives clinicians more ammunition for personalized treatment.

Conclusion

Accommodative spasm results from various factors and is typically misdiagnosed because it presents similarly with pseudomyopia. This paper discusses the issues that make early recognition, accurate diagnosis by cycloplegic refraction, and multidisciplinary management critical. Pharmacologic treatment remains the mainstay in the management of the acute condition. However, long-term success can only be achieved with non-pharmacologic interventions, which include vision therapy, optical correction, and modification of use behavior. Recently developed diagnostic tools and surgical treatments have brought new optimism for patients with refractory conditions. Therefore, to ensure optimal visual outcomes and improved quality of life for these individuals, health care providers should take the initiative in accommodative dysfunction screening as clinical cases increase due to visual stress from digital device usage.

Recommendations

Healthcare providers must begin routine screening for accommodative spasm as part of the evaluation of any patient who complains specifically of visual fatigue or has blurry distance vision or headaches related to near work. Cycloplegic refraction should become the rule in suspected cases to prevent over-correction with minus lenses. Ergonomic advice including vision hygiene education should be incorporated into patient management. Clinicians are urged to include therapy for vision in their treatment strategies so that accommodative flexibility can be developed and recurrences reduced. Interdisciplinary collaboration between ophthalmologists, optometrists, and specialists in behavioral optometry is proposed for more complicated cases. Other recommendations involve increasing awareness of visual hygiene among students and workers, promoting scheduled breaks from using screens to avoid accommodative fatigue, and generalizing all these precautions.

Recommendations for future research

Future research should be directed toward large-scale, controlled trials that compare the efficacy of various cycloplegics and their best regimens in the treatment of accommodative spasm. Another long-term study would be on the outcomes of combining pharmacologic and vision therapy treatments. Among the new tools that should be tested for possible protocols to lead in early, non-invasive detection are such innovations as the cyclodamia technique and dynamic autorefractors. The psychosocial factors, stress levels, and screen time habits must be assessed to determine their contribution to developing this condition and its recurrence. Ethical as well as clinical guidelines for surgical procedures such as clear lens extraction in refractory cases should also be set up. Pediatric studies would also improve measures for early intervention and prevention.

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