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Original Article

Comparative Study Between Aqueous Drops and Gel Drops in Treating Dry Eye

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ABSTRACT:

Pauper: It is a comparison between the effectiveness and effects of aqueous drops and gel drops in treating dry eye, with a focus on evaluating their effectiveness and side effects.

Methods: A study on dry eye was conducted using aqueous drops and gel drops based on the opinions of doctors and patients, with an analysis of previous studies comparing them in terms of ease of use, duration of effect, and side effects.

Resultes: The results showed that aqueous drops are effective but their effect is not long-lasting and may cause some burning and redness, while gel drops are more effective in keeping the eye moist for a longer period. Based on this, it was concluded that gel drops provide a better treatment option for dry eye patients.

Keywords: Dry eye, aqueous drops, gel drops, treatment assessment, eye comfort, eye hydration, quality of life, clinical outcomes, health improvement.

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INTRODUCION:

Dry eye is a common health condition that affects eye comfort. It occurs when the body does not produce enough tears or when tears evaporate faster than normal. Tears play a crucial role in protecting the eye from infections and maintaining comfort and hydration. If left untreated, dry eye disease can lead to vision loss. Recent studies have indicated that the microbial environment within the eye may play a significant role in the development of the disorder[1].

People with dry eye experience discomfort, burning, stinging, and visual fatigue. The most common causes of dry eye include aging, environmental changes, and excessive use of electronic devices[2].

Treatment for dry eye involves improving the quality and quantity of tears, either through moisturizing drops or techniques like punctual occlusion. Modifying daily habits and environmental factors can also help alleviate symptoms[3].

Objective of the Article

This article aims to review two types of eye drops used in the treatment of dry eye: aqueous drops and gel drops, and to compare their effectiveness in treating this condition. We will present a comparison between these two types of drops based on their effectiveness, duration of effect, and their compatibility with the needs of patients[4].

Aqueous Drops vs. Gel Drops

1. Aqueous Drops

Aqueous drops are the most commonly used treatment for dry eye, serving to hydrate the eye and rapidly alleviate symptoms; however, they are effective for a short period. These drops primarily contain water and some moisturizing agents that help to hydrate the eye surface[5].

2. Gel Drops

Gel drops contain components with higher viscosity, allowing them to remain on the eye surface longer. They provide longer-lasting hydration, reducing the need for repeated application throughout the day[6].

The comparison between aqueous and gel drops in treating dry eye is significant for the following reasons:

1. Mechanisms and Formulations:

Aqueous Drops: Primarily contain water-based components, providing quick hydration but for a short duration[7].

Gel Drops: Contain higher viscosity components, enhancing long-lasting hydration[8].

2. Customization of Treatment to Individual Needs:

Some patients may benefit more from aqueous drops due to their quick effect and ease of use, while others may find gel drops more effective as they provide continuous hydration[9].

3. Side Effects:

Aqueous drops may cause irritation or sensitivity in some patients due to preservatives[10].

Gel drops may lead to temporary blurring of vision after application[4].

4. Patient Comfort and Quality of Life:

The use of aqueous drops may require frequent reapplication, which can be bothersome for some patients[3].

Gel drops last longer and reduce the need for frequent applications, thus improving overall patient comfort[6].

5. Effectiveness in Specific Conditions:

In dry environments or when using electronic devices for long periods, gel drops may be more effective due to their ability to maintain eye hydration for longer durations[2].

MATEARIA AND METHODS:

Data were collected through two questionnaires directed towards two main groups: patients suffering from dry eye and ophthalmologists specialized in treating this condition. The aim of the questionnaires was to assess the effectiveness of aqueous and gel drops from the perspective of both patients and doctors[1].

Consent was obtained from the patients and doctors who assisted in gathering data to derive the results[3].

1. Patient Questionnaire:

The questionnaire was designed to evaluate patients' experiences with aqueous and gel drops. Questions included assessments of the treatment's effectiveness, side effects, patient preferences, and the impact of the treatment on their quality of life[5].

The questionnaire included both closed and open-ended questions covering various aspects such as symptom severity, frequency of drop usage, and potential complications. It was distributed electronically and in paper form to ensure it reached as many participants as possible, and responses were collected, analyzed, and compared to reach clear results[6].

2. *Doctor Questionnaire:*

The doctor questionnaire aimed to evaluate physicians' assessments of the effectiveness of aqueous and gel drops, focusing on their clinical observations and practical experiences in improving dry eye treatment[7].

The questionnaire was sent electronically via email to doctors, and their responses were analyzed by comparing answers, which were largely aligned8.

RESULT:

Clear results were reached using two groups of questionnaires, one specific to patients. A random sample of 10 patients was selected who responded to the questionnaire detailing their personal treatment experiences and concluded that gel drops are superior to aqueous drops in treating dry eye. The second group focused on doctors, with 3 doctors participating and affirming that gel drops are significantly better than aqueous drops for treating dry eye.
The following results were evident from both questionnaires:
*Patient Questionnaire Results:
- Symptom Improvement: Most patients using gel drops reported a notable improvement in dry eye symptoms such as burning, redness, and the sensation of a foreign body in the eye compared to those using aqueous drops, with only brief visual blurring noted. In contrast, some patients indicated that aqueous drops caused side effects like redness, itching, and burning.
- Duration of Hydration: Eight patients indicated that gel drops provide long-lasting hydration lasting for hours, thereby reducing the need for frequent reapplication throughout the day compared to aqueous drops that required more frequent use. Two patients noted that aqueous drops still provided hydration and were easy to use.
- Overall Comfort: Patients reported that gel drops were more comfortable for long-term use, although some noted mild temporary blurring of vision immediately after application, which resolves quickly.
- Patient Preferences: Results showed that 8 patients preferred gel drops over aqueous ones due to their long-lasting symptom relief, while 2 preferred aqueous drops for their ease of distribution on the eye's surface.
*Doctor Questionnaire RESULT:
- Effectiveness Assessment: Doctors confirmed that gel drops provide better efficacy in alleviating dry eye symptoms compared to aqueous drops, attributed to their ability to form a protective layer that lasts longer on the eyes urface.
-Clinical Recommendations: Generally, doctors recommended gel drops for patients with moderate to severe dry eye while suggesting aqueous drops for mild cases or as a supplementary treatment.
- Side Effects: Doctors noted that side effects from gel drops were limited and often related to temporary visual blurring, which does not significantly impact patient

experience compared to the more diverse side effects associated with aqueous drops, such as eye pain, burning, redness, tingling, and itching.
- Tolerance and Compliance: Doctors observed that patients showed better tolerance and greater adherence to treatment when using gel drops, enhancing their overall effectiveness in managing dry eye.
*Summary of Results: These findings indicate that gel drops offer clear advantages over aqueous drops in treating dry eye, including greater symptom improvement, longer-lasting hydration, and enhanced patient comfort. Therefore, recommending gel drops as a primary option for dry eye treatment may be the most effective approach according to evaluations from both patients and doctors.
*Achievement of Objectives:
1.Assessment of Drop Effectiveness: This objective was successfully achieved, with results showing that gel drops outperformed aqueous drops in alleviating dry eye symptoms such as burning and redness and providing long-lasting hydration. This evaluation was based on patient opinions and experiences, as well as clinical observations by doctors, reinforcing the credibility of the results.
2.Identifying Patient and Doctor Preferences: Patient and doctor preferences were thoroughly studied, revealing a clear inclination towards gel drops due to their efficacy and sustainability in alleviating symptoms.

It was noted that patients found gel drops more comfortable, while doctors acknowledged their effectiveness in moderate to severe dry eye cases, thereby achieving the second objective.
.3Providing Recommendations for Treatment Improvement:** Based on the results, clear recommendations were made supporting the use of gel drops as a first-line option in dry eye treatment. Additionally, some aspects for improvement were identified, such as addressing the temporary blurring of vision reported by some patients. These recommendations aim to enhance the healthcare provided and guide the optimal use of gel drops.

DISCUSSION:

The results were discussed and compared with previous studies:
Previous studies on dry eye have provided an overview of the causes and treatments of the condition, highlighting the importance of using eye drops as a primary option for hydrating the eye and alleviating symptoms. Those studies indicated that aqueous drops are a popular choice due to their ease of use and rapid effects; however, they did not delve deeply into a precise comparison between different types of drops regarding long-term effectiveness and comfort[2].
The results from the questionnaire conducted shed more specific light on the differences between aqueous and gel drops, showing that gel drops provide higher efficacy and longer hydration, thus enhancing patients' quality of life. This aligns with some recent literature highlighting the growing benefits of gel drops, but adds a direct practical dimension by confirming this efficacy through patient and doctor experiences[4] .
*Importance of the Results and Potential Applications:
1.Improving Healthcare: The results support the use of gel drops as a preferred option in treating dry eye, especially in moderate to severe cases. This could guide physicians to modify treatment protocols to recommend a wider use of gel drops, potentially leading to improved treatment outcomes and reduced symptoms in the long term[6].
2.Awareness and Education: The results provide clear evidence that can be used to educate patients about available treatment options, emphasizing the benefits of gel drops. They can also contribute to training physicians on the importance of considering patient preferences and experiences when selecting the appropriate treatment[2].
3.Product Development: Manufacturers of eye drops can benefit from these results by developing and improving gel drop formulations to deliver more effective products while working to reduce potential

side effects such as temporary visual blurring[10].
4.Future Research: The findings open the door to further research focused on improving gel drop formulations and making them more user-friendly, including studying their long-term effects and improving application methods to mitigate temporary visual blurring[6].
*Unexpected Interpretations:
.1Temporary Blurring of Vision: Despite the effectiveness of gel drops, the results showed that some patients experienced temporary visual blurring after use, which is a side effect that may not have received sufficient attention in previous studies. This effect should be carefully interpreted and included in usage recommendations, indicating a need to improve the design or instructions related to using gel drops[6] .
.2Patient Preferences: While previous literature may have focused solely on clinical effectiveness, current results indicated that user experience and overall comfort play a significant role in adherence to treatment and its preferences. This suggests that medical recommendations should consider the personal aspect and daily experiences of the patient[7].

CONCLUSION:

These results provide a new and more in-depth perspective on the effectiveness of gel drops compared to aqueous drops in treating dry eye, reinforcing the importance of shifting towards the use of gel drops in therapeutic plans. Additionally, the findings highlight aspects that require improvement and emphasize the necessity for ongoing research and development to ensure the best treatment options for patients.

In this way, the results have clearly illustrated how they align with previous literature, explained their significance, discussed potential applications, and addressed any unexpected findings.

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