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Test Patent

ID:

Date of Birth: 1/1/1965

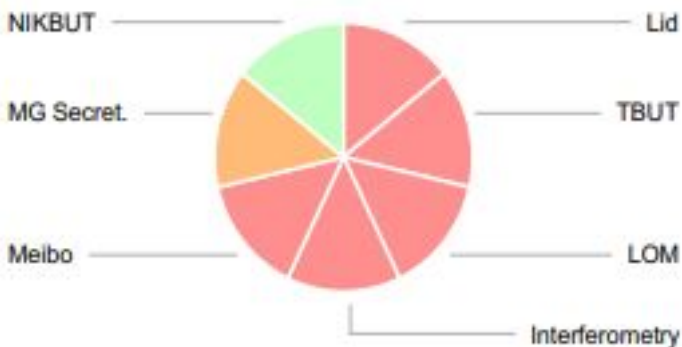
Category assessment according to most severe test result



● (Oil) Meibomian Gland Deficiency

Goal

- Reduce tear film evaporation by creating better secretions and restoring gland function



Recommendation:

- ✔ Maintain a diet rich in oily fish and nuts
- ✔ 2-3 g/day medical grade Omega 3 supplements (PRN)
- ✔ Blink Exercises
- ✔ IPL
- ✔ NuLids microexfoliation at home, daily

● Inflammation

Goal

- Reduce inflammation and secondary tissue damage
- Clean up tear film contaminants



Recommendation:

- ✔ Flush with preservative free tears or eye wash tid+
- ✔ 2-3 g/day medical grade Omega 3 supplements (PRN)
- ✔ Lotemax
- ✔ IPL

● (Bacteria) Blepharitis

Goal

- Reduce bacterial load and secondary inflammation



Recommendation:

- Avenova 2x/day
- NuLids microexfoliation at home, daily

● Lid Function

Goal

- Reduce evaporative stress through improved lid closure and tear flow



Recommendation:

- Blink Exercises

● (External) External Considerations

Goal

- Reduce the negative impact of evaporative stress with extended device use
- Improve the air quality
- Eliminate or reduce dry eye side effects
- Work to discover any undiagnosed inflammatory condition in order to gain systemic inflammatory resolution and/or control



Recommendation:

- Assess and improve your computer environment
- Take frequent breaks
- Limit the duration of uninterrupted device use
- Blink Exercises
- Identify the issue and adjust the environment: Divert airflow, consider humidifier or dehumidifier
- Clean A/C ducts, etc.

● Allergy

Goal

- Reduce symptomatic itching as well as allergic tear film contaminants and secondary inflammation



Recommendation:

- Flush with preservative free artificial tears as needed
- Evaluate your environment and make adjustments (dehumidifier or humidifier, shower at night, change pillow cases often, wear mask while cleaning, etc)
- Lotemax

● (Water) Aqueous deficiency

Goal

- Reduce inflammation, and secondary tissue damage
- clean up tear film contaminants
- increase fluid production



Recommendation:

- Drink 8-10 glasses of water per day
- 2-3 g/day medical grade Omega 3 supplements (PRN)

GLOSSARY

Lid (Lid Appearance)

When the eyelid has a vascularized appearance or is red, thick or swollen, scalloped or notched, this can be a sign of inflammation (ocular rosacea) and that the oil glands inside the lid are not functioning properly. The lid appearance is further evaluated by assessing the oil gland openings and presence of froth along the lid margin. When gland secretions become stagnant and glands become blocked, they may appear to be pouting (similar to a pimple) or may be capped off all together. This is a sign of advanced meibomian gland disease. When glands remain blocked, there is risk of irreversible gland loss.

TBUT (Tearfilm breakup Time)

The tear film is, among other things, responsible for reducing the friction during blinks and for maintaining the optical quality of the eye. It is therefore crucial that the tear film remains stable between blinks. A tear film that is stable for less than 10 seconds may contribute to symptoms of dry eye or fluctuating vision. By applying a fluorescent dye to your eye, the tears will be stained and the tear film break-up time can be assessed.

LOM (Line of Marx)

To assess the line of Marx, the lower lid is pulled down slightly and the inner surface of the lid margin is observed with a biomicroscope, after applying a dye such as fluorescein or lissamine green to the ocular surface. Research shows that the amount the staining correlates to the severity of meibomian gland dysfunction. When the oil glands are covered by the stain, there is likely already an oil deficiency and structural loss.

Interferometry

The tear film consists of multiple layers. The outermost layer, the one exposed to air, is a lipid layer that plays an important role in preventing the evaporation of the aqueous layer of the tear film. The lipid layer thickness can be assessed using a technique called interferometry. The color palette of the tear film interference pattern gives an indication of the lipid layer thickness. Contact lens wearers with an increased lipid production may experience higher deposits on their lenses which may require the use of special cleaning solutions.

Meibo (Meibography)

The meibomian glands are located in the upper and lower eyelid. These glands produce an oily substance that plays a crucial role in preserving the eye's tear film stability, as this oily substance helps preventing the evaporation of tears and thus symptoms of dry eye. When assessing the meibomian glands, only the gland orifices (or openings) can be seen at the lid margin with a biomicroscope. The actual glands can only be visualized by means of meibography, an imaging method using infrared light. Information about the health of the glands can further be derived from assessing the degree of capping of the gland orifices and the quality of the oily secretions.

MG Secret. (Meibomian Glands Secretion)

With meibomian gland dysfunction (MGD), the glands producing the oily secretion (lipid) to help stabilizing the tear film have been compromised. In cases of MGD, the openings of these glands may be irregularly spaced, blocked (thus preventing the expression of the oily secretion) or reduced in number. In MGD, the gland secretion may not appear clear and oily but instead thicker and could have a toothpaste-like appearance. The meibomian glands in the eyelids can be visualized using infrared light. In MGD, a drop-out or loss of these glands is observed, which is often associated with aging. Due to the lack of or the reduced secretion from these glands, symptoms of dry eye may be experienced.

NIK-BUT

The tear film is, among other things, responsible for reducing the friction during blinks and for maintaining the optical quality of the eye. It is therefore crucial that the tear film remains stable between blinks. A tear film that is stable for less than 10 seconds may contribute to symptoms of dry eye or a burning sensation. Insufficient tear film stability can also be reason for fluctuating vision due to the reduced optical quality. For the non-invasive measurement infrared light is used.

Conj. injection (Conjunctival injection)

Ocular redness can be caused by a number of factors including dryness, mechanical friction, allergies, infections, and eye drops containing preservatives, topical medications, and contact lens wear.

Lid (Lid appearance)

When the eyelid has a vascularized appearance or is red, thick or swollen, scalloped or notched, this can be a sign of inflammation (ocular rosacea). Inflammation along the lid margin can affect the functionality of the oil glands.

TF-Debris (Tear film debris)

Debris in the tear film may signify an imbalance in tear film. Debris can come from multiple origins including poor secretions from the oil glands.

Osmolarity

Tear osmolarity (the number of dissolved salts) is used as an indicator of the quality of the tear film. Normal tear film osmolarity values are below 300 mOsmol/l and values of 320 mOsmol/l or greater may be indicative of dry eye.

Corneal Staining

Insufficient tear quantities may result in an epithelial defect, which is the outermost layer of the eye. So-called "staining" appearance can be observed when a dye (sodium fluorescein) is applied to the ocular surface.

Conj. Staining (Conjunctival Staining)

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Lid Biofilm

A thin film, bacterial in nature, can form on the eyelashes and the eye itself. This film can cause inflammation, and can contaminate the tear film.

Conj. injection (Conjunctival injection)

Ocular redness can be caused by a number of factors including dryness, mechanical friction, allergies, infections, and eye drops containing preservatives, topical medications, and contact lens wear.

Crusting (Crusting, dry)

Blepharitis is inflammation of the eyelids and is often associated with an overgrowth of bacteria that is normally found on the eyelids. Blepharitis varies, but is often accompanied by scaly lashes.

Collarettes (Collarettes, Demodex)

Demodex are tiny parasitic mites that can be found on the eyelashes. With increasing age, there is a greater likelihood of finding them in a patient's eyelashes. In most cases, demodex are asymptomatic; however, increased levels of demodex can lead to inflammation of the lid margin, symptoms of dry eye, and tear film quality.

Clumping (Clumping, wet)

Blepharitis is inflammation of the eyelids and is often associated with an overgrowth of bacteria that is normally found on the eyelids. Blepharitis sometimes presents with a wet discharge, crusting, and scaly lashes.

Chalasis (Conjunctival Chalasis)

Using a biomicroscope at high magnification, the bulbar conjunctiva is assessed along the lower lid margin, close to the colored part of the eye. In cases of dry eye, folds that run parallel to the lid margin may be observed. These folds may form as a result of the friction that occurs on the cornea and conjunctiva during blinking. This friction is greater in cases of low tear quantity or with reduced tear film quality, which may lead to a higher number of folds.

Exposure Staining

Insufficient tear quantities may result in areas of dryness on the epithelium, which is the outermost layer of the cornea and conjunctiva. A so-called "staining" appearance can be observed with a biomicroscope after applying a yellow dye (sodium fluorescein) to the ocular surface. When the staining is patterned horizontally across the opened part of the eye or inferiorly on the cornea, it may indicate that your eyes do not close completely when you blink and/or during sleep.

Partial Blinks

In addition to the tear film composition and quality, blinking plays an important role in maintaining a stable tear film. The blink rate can be reduced, increased or normal. In some patients, incomplete blinks can be observed during which the lids are not fully closed. Blinking, with full lid closure, not only wipes away "old" tears, but it also spreads fresh tears across the ocular surface, to prevent surface drying and to maintain good optical quality.

Lagophthalmos

The Korb-Blackie light test, along with any report of ocular discomfort upon waking, is used to determine if your eye seal is strong enough to keep your eyes completely closed during sleep. A light source is placed against your closed upper lid and any escaping light indicates a gap in lid closure. If the eye lids are not sealed shut during sleep, the ocular surface is exposed, which can lead to tear evaporation, surface inflammation, and irritation at wake up.

Computer Use (Extensive Computer/Device Use)

Prolonged use of a computer or handheld device often causes the user to blink less frequently and to not close the eye lids fully during the blink. This leads to evaporation, exposure, and an unstable tear film.

Environm. Influence (Environmental Influence)

The quality of the air and the direction and force of the flow can have a negative impact on the stability of the tear film. Impurities in the air, such as mold or allergens, can cause additional instability.

Medication SE (Medication side effects)

Medications and combinations of medications can cause dryness of the ocular surface.

Systemic Condit. (Systemic conditions)

Systemic conditions, especially inflammatory ones, can contribute to local ocular inflammation. In severe cases, it may be difficult to achieve a successful ocular outcome until the systemic inflammation is better controlled.

TF-Debris (Tear film debris)

Allergic conjunctivitis can cause extra mucous to form, which can disrupt the balance of the tear film. It typically has little or no color and is often stringy in nature.

Papillae

When the conjunctiva becomes inflamed, small bumps can form on the inside of the lid. They are assessed according their size and abundance, and often indicate an allergic response.

ULMS (Upper Lid Margin Staining)

To assess lid wiper epitheliopathy, the upper lid is carefully everted and the inner surface of the lid margin is observed after applying a dye such as fluorescein to the ocular surface. During each blink, a small area of the lid margin "wipes" the ocular surface clean and spreads fresh tears across the surface. Depending on the amount and the composition of the tears, the interaction of the lid with the ocular surface can compromise some of the cells in the lid wiper region. In eyes with an inadequate tear film composition or insufficient tear volume, the friction during the blink is increased, which may result in greater amounts of staining of this lid wiper region.

TMH (Tear Meniscus Height)

The tear quantity in a patient's eye may be estimated by measuring the height of the tear meniscus, which is the tear "prism", that's visible between the ocular surface and the adjacent lid margin. The tear meniscus height has been determined non-invasively using infrared light. As a guideline, values of less than 0.2 mm indicate a low tear quantity.

Summary of Recommendations

- › Maintain a diet rich in oily fish and nuts
- › 2-3 g/day medical grade Omega 3 supplements (PRN)
- › Blink Exercises
- › IPL
- › NuLids microexfoliation at home, daily
- › Flush with preservative free tears or eye wash tid+
- › Lotemax
- › Avenova 2x/day
- › Assess and improve your computer environment
- › Take frequent breaks
- › Limit the duration of uninterrupted device use
- › Identify the issue and adjust the environment: Divert airflow, consider humidifier or dehumidifier
- › Clean A/C ducts, etc.
- › Flush with preservative free artificial tears as needed
- › Evaluate your environment and make adjustments (dehumidifier or humidifier, shower at night, change pillow cases often, wear mask while cleaning, etc)
- › Drink 8-10 glasses of water per day

The underlying contributors of your dry eye disease have now been determined and paired with treatment known to work for those conditions. With a successful balance of treatments, your symptoms can be drastically reduced, or eliminated altogether. However, **the success of the treatment is very dependent on your willingness to be consistent.** It will seem like a lot of work at first, but once stabilized, your treatments can likely be reduced. Follow up is important in order to track your progress and modify treatments accordingly. It is also important to identify and address any contributing factors: diet, cigarette use, ceiling fans, car AC, an computer environment. Be adamant about blinking while at the computer or reading, and remember to take frequent eye breaks.

Each element of the plan is essential to your treatment success. Please call with any questions, or if you are unable to implement any of the treatments listed.