

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:*

**A**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality*: **VKC** (*vernal* means 'spring'). VKC can be year-round, however.

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- *Seasonality: VKC* (*vernal* means 'spring'). VKC can be **year-round**, however.

*Year-round VKC is associated with what sort of climate?*

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*Year-round VKC is associated with what sort of climate?*

Tropical

Q

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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*

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It is called 'seasonal allergic conjunctivitis' (SAC)

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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*

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?

*By what other name is SAC known?*

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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*

It is called '~~seasonal allergic conjunctivitis~~' (SAC)

*hay-fever conjunctivitis*

*By what other name is SAC known?*



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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*  
It is called 'seasonal allergic conjunctivitis' (SAC)

*Just as VKC and AKC are closely related, SAC has a 'partner in crime' as well. What is this closely-related condition?*

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**Perennial** allergic conjunctivitis (PAC)

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It is called 'seasonal allergic conjunctivitis' (SAC)

*Just as VKC and AKC are closely related, SAC has a 'partner in crime' as well. What is this closely-related condition?*

**Perennial** allergic conjunctivitis (PAC)

*Is PAC seasonal?*

**A**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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It is called 'seasonal allergic conjunctivitis' (SAC)

*Just as VKC and AKC are closely related, SAC has a 'partner in crime' as well. What is this closely-related condition?*

**Perennial** allergic conjunctivitis (PAC)

*Is PAC seasonal?*

No (note that in this context, perennial means 'year round')

Q

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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*  
It is called 'seasonal allergic conjunctivitis' (SAC)

*Which **type of hypersensitivity reaction** is VKC (and AKC)?*

*Before we answer this, let's drill down on **hypersensitivity reactions***

*No question yet—proceed when ready*



# Q

*Firstly: What is a Hypersensitivity Reaction?*



# A

*Firstly: What is a Hypersensitivity Reaction?*

An exaggerated version of a normal immune response—ie, too much of a good thing





# Q

*How many Hypersensitivity Reactions of the Ocular Surface are there?*



# A

*How many Hypersensitivity Reactions of the Ocular Surface are there?*

*Type I*

*Type II*

*Type III*

*Type IV*



## Hypersensitivity Reactions of the Ocular Surface

*Type I*

*Type II*

*Type III*

*Type IV*

Note: The conceptualization of distinct and separable hypersensitivity reactions is considered **outdated** by modern immunologists in that most clinical hypersensitivity presentations involve a *blend* of the purportedly distinct mechanisms.

*No question—proceed when ready*



## Hypersensitivity Reactions of the Ocular Surface

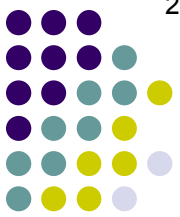
*Type I*

*Type II*

*Type III*

*Type IV*

Note: The conceptualization of distinct and separable hypersensitivity reactions is considered **outdated** by modern immunologists in that most clinical hypersensitivity presentations involve a *blend* of the purportedly distinct mechanisms. That said, this framework for categorizing hypersensitivity reactions persists in the literature, and thus familiarity with it remains an obligation of ophthos-in-training.



Q

## Hypersensitivity Reactions of the Ocular Surface

*Type I*

*Type II*

*Type III*

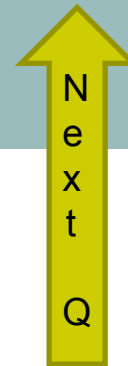
*Type IV*

*Type I reactions involve...* [One word that captures the nature of this rxn]

*Type II reactions involve...*

*Type III reactions involve...*

*Type IV reactions involve...*





# A

## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

*Type II*

*Type III*

*Type IV*

**Type I reactions involve...Anaphylaxis**

*Type II reactions involve...*

*Type III reactions involve...*

*Type IV reactions involve...*



Q

## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Type II**

**Type III**

**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...** [Two words capturing this rxn]

**Type III reactions involve...**

**Type IV reactions involve...**



## Hypersensitivity Reactions of the Ocular Surface

*Anaphylaxis*

*Type I*

*Cytotoxic Ab*

*Type II*

*Type III*

*Type IV*

*Type I reactions involve...Anaphylaxis*

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...*

*Type IV reactions involve...*





## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Type III**

**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...** [Three words for this one]

**Type IV reactions involve...**



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

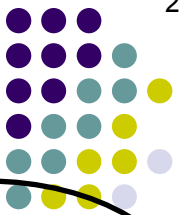
**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...**



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

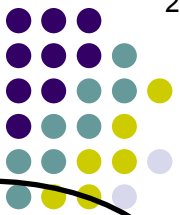
**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...** [Three words again]



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

**Cell-mediated  
reactions**

**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...Cell-mediated reactions**

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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*One form of allergic conjunctivitis is seasonal in nature. What is it called?*

It is called 'seasonal allergic conjunctivitis' (SAC)

*Which type of hypersensitivity reaction is VKC (and AKC)?*



*Now, let's answer this question*

**A**

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It is called 'seasonal allergic conjunctivitis' (SAC)

*Which type of hypersensitivity reaction is VKC (and AKC)?*

Type IV

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

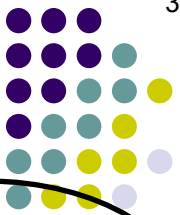
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It is called 'seasonal allergic conjunctivitis' (SAC)

*Which type of hypersensitivity reaction is VKC (and AKC)?*

**Type IV**

*Let's sidebar a bit to drill down on **Type IV** reactions*



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

**Cell-mediated  
reactions**

**Type IV**

**Type I reactions involve...Anaphylaxis**

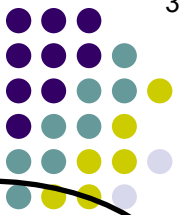
**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...Cell-mediated reactions**

*'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?*





## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

**Cell-mediated  
reactions**

**Type IV**

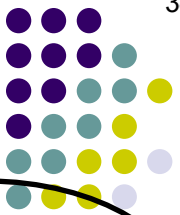
**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...Cell-mediated reactions**

**'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?**  
T-helper cells



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
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**Type III**

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**Type IV**

**Type I reactions involve...Anaphylaxis**

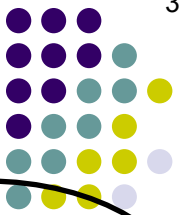
**Type II reactions involve...Cytotoxic antibodies**

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*'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?*  
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*In what way are T-helper cells mediating the reaction?*



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
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**Type III**

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reactions**

**Type IV**

**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

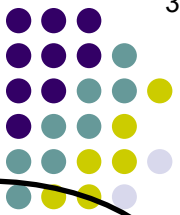
**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...Cell-mediated reactions**

*'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?*  
T-helper cells

*In what way are T-helper cells mediating the reaction?*

In Type IV reactions, T-helpers interact with antigens, thereby becoming activated.



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
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**Type III**

**Cell-mediated  
reactions**

**Type IV**

**Type I reactions involve...Anaphylaxis**

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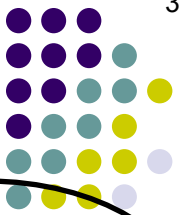
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*'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?*  
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*In what way are T-helper cells mediating the reaction?*

In Type IV reactions, T-helpers interact with antigens, thereby becoming activated. Once activated, the T-helpers release chemotactic factors that recruit and activate macrophages.



## Hypersensitivity Reactions of the Ocular Surface

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**Type I**

**Cytotoxic Ab**

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**Type I reactions involve...Anaphylaxis**

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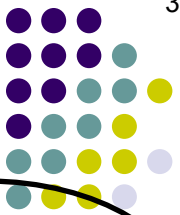
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*In what way are T-helper cells mediating the reaction?*

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*That's a convoluted process. How long does it take to become clinically apparent?*



## Hypersensitivity Reactions of the Ocular Surface

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**Cytotoxic Ab**

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*'Cell-mediated reaction'...Which sort of immune cell is doing the mediating?*  
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*In what way are T-helper cells mediating the reaction?*

In Type IV reactions, T-helpers interact with antigens, thereby becoming activated. Once activated, the T-helpers release chemotactic factors that recruit and activate macrophages.

*That's a convoluted process. How long does it take to become clinically apparent?*

24-72 hours, which is why this reaction is often referred to as *delayed hypersensitivity*

Q

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It is called 'seasonal allergic conjunctivitis' (SAC)

*Which type of hypersensitivity reaction (ie, I-IV) is VKC (and AKC)?*

Type IV

*Which type of hypersensitivity reaction is SAC (and PAC)?*

**A**

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Type I



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Type IV

*Which type of hypersensitivity reaction is SAC (and PAC)?*

**Type I**

*And lastly, a sidebar on **Type I** reactions*



Q

## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

*Cytotoxic Ab*

*Type II*

*Immune-complex  
reactions*

*Type III*

*Cell-mediated  
reactions*

*Type IV*

**Type I reactions involve...Anaphylaxis**

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

*Type IV reactions involve...Cell-mediated reactions*

*Briefly, how does an anaphylactic reaction proceed?*



# Q/A

## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

*Cytotoxic Ab*

*Type II*

*Immune-complex  
reactions*

*Type III*

*Cell-mediated  
reactions*

*Type IV*

**Type I reactions involve...Anaphylaxis**

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

*Type IV reactions involve...Cell-mediated reactions*

**Briefly, how does an anaphylactic reaction proceed?**

The binding of  to  receptors on  cells causes the cells to



*Cell-mediated  
reactions  
Type IV*

*Immune-complex  
reactions  
Type III*

*Cytotoxic Ab  
Type II*

## *Hypersensitivity Reactions of the Ocular Surface*

*Anaphylaxis  
Type I*

*Type I reactions involve...Anaphylaxis*

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

*Type IV reactions involve...Cell-mediated reactions*

*Briefly, how does an anaphylactic reaction proceed?*

The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

*Cytotoxic Ab*

*Type II*

*Immune-complex  
reactions*

*Type III*

*Cell-mediated  
reactions*

*Type IV*

**Type I reactions involve...Anaphylaxis**

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

*Type IV reactions involve...Cell-mediated reactions*

*Briefly, how does an anaphylactic reaction proceed?*

The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**, with the subsequent release of

one word

and other pre-formed inflammatory mediators



*Cell-mediated  
reactions  
Type IV*

*Immune-complex  
reactions  
Type III*

*Cytotoxic Ab  
Type II*

## *Hypersensitivity Reactions of the Ocular Surface*

*Anaphylaxis  
Type I*

*Type I reactions involve...Anaphylaxis*

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

*Type IV reactions involve...Cell-mediated reactions*

*Briefly, how does an anaphylactic reaction proceed?*

The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**, with the subsequent release of **histamine** and other pre-formed inflammatory mediators



## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

**Cytotoxic Ab**

**Type II**

**Immune-complex  
reactions**

**Type III**

**Cell-mediated  
reactions**

**Type IV**

**Type I reactions involve...Anaphylaxis**

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*Briefly, how does an anaphylactic reaction proceed?*

The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**, with the subsequent release of **histamine** and other pre-formed inflammatory mediators

*Sounds fast. How long does it take to become clinically apparent?*



# A

## Hypersensitivity Reactions of the Ocular Surface

**Anaphylaxis**

**Type I**

*Cytotoxic Ab*

*Type II*

*Immune-complex  
reactions*

*Type III*

*Cell-mediated  
reactions*

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**Type I reactions involve...Anaphylaxis**

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*Briefly, how does an anaphylactic reaction proceed?*

The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**, with the subsequent release of **histamine** and other pre-formed inflammatory mediators

*Sounds fast. How long does it take to become clinically apparent?*

Only minutes (which is why which is why this reaction is often referred to as *immediate hypersensitivity*)





## Hypersensitivity Reactions of the Ocular Surface

*Anaphylaxis*

*Type I*

*Cytotoxic Ab*

*Type II*

*Immune-complex  
reactions*

*Type III*

*Cell-mediated  
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*Type IV*

*Type I reactions involve...Anaphylaxis*

*Type II reactions involve...Cytotoxic antibodies*

*Type III reactions involve...Immune-complex reactions*

***For more on hypersensitivity reactions  
of the ocular surface, see slide-set K21***

The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**, with the subsequent release of **histamine** and other pre-formed inflammatory mediators

*Sounds fast. How long does it take to become clinically apparent?*  
Only minutes (which is why which is why this reaction is often referred to as *immediate hypersensitivity*)

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality: **VKC** (*vernal* means 'spring'). VKC can be year-round, however.*
- *Causes a chronic papillary conjunctivitis:*

**A**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:* **VKC** (*vernal* means 'spring'). VKC can be year-round, however.
- *Causes a chronic papillary conjunctivitis:* **Both**

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For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:* **VKC** (*vernal* means 'spring'). VKC can be year-round, however.
- *Causes a chronic papillary conjunctivitis:* **Both**
- *Somewhat smaller papillae:*

**A**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:* **VKC** (*vernal* means 'spring'). VKC can be year-round, however.
- *Causes a chronic papillary conjunctivitis:* **Both**
- *Somewhat smaller papillae:* **AKC**

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:* **VKC** (*vernal* means 'spring'). VKC can be year-round, however.
- *Causes a chronic papillary conjunctivitis:* **Both**
- *Somewhat smaller papillae:* ~~AKC~~ **VKC**

*What word is commonly used to describe the size of papillae in VKC?*

A

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*What word is commonly used to describe the size of papillae in VKC?*  
**Giant.** VKC is a cause of so-called *giant papillary conjunctivitis (GPC)*

Q

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*What word is commonly used to describe the size of papillae in VKC?*

**Giant.** VKC is a cause of so-called *giant papillary conjunctivitis* (GPC)

*What word is commonly used to describe the shape of the papillae in VKC?*



A

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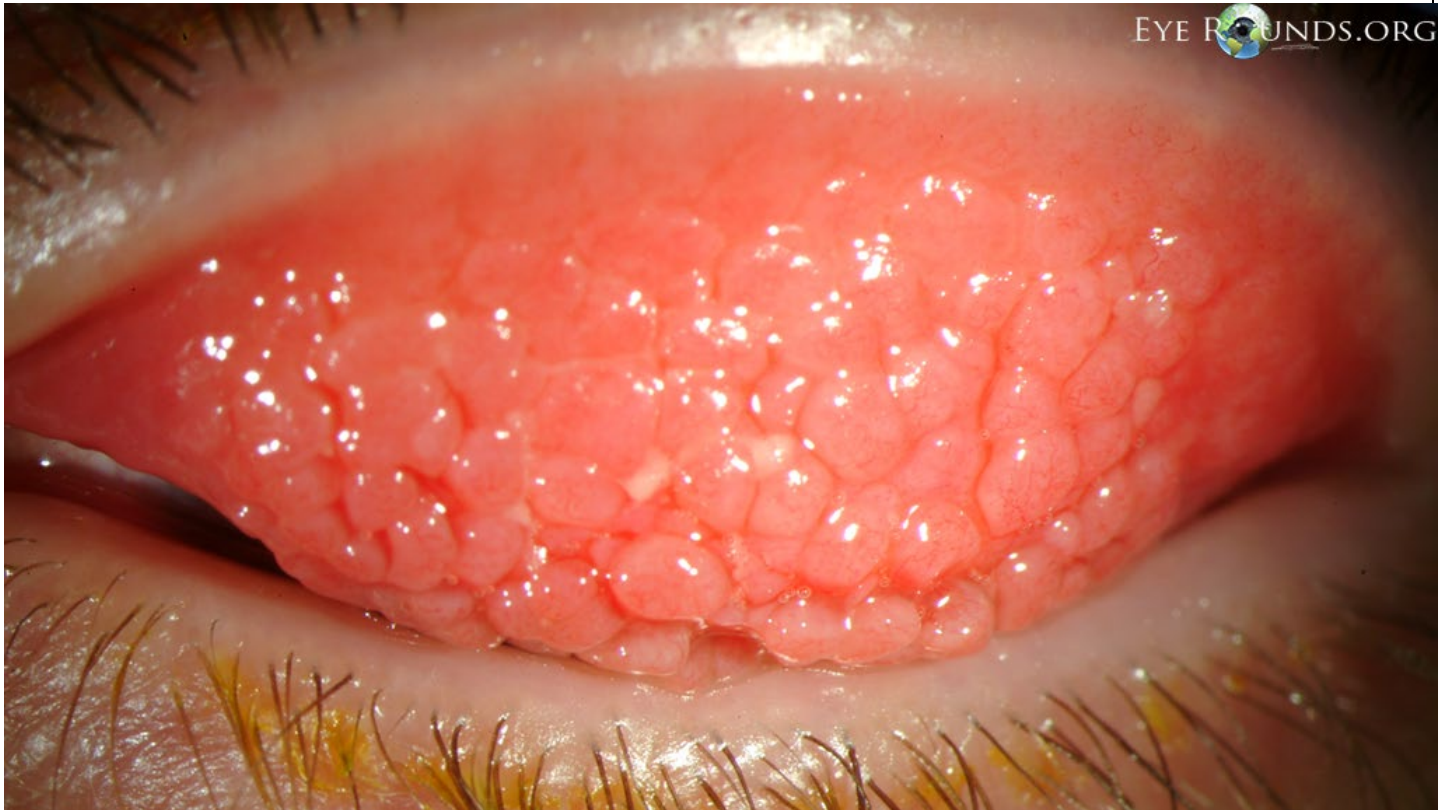
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**Giant.** VKC is a cause of so-called *giant papillary conjunctivitis* (GPC)

*What word is commonly used to describe the shape of the papillae in VKC?*

**Cobblestones**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*



VKC: Giant 'cobblestone' papillae

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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What word is commonly used to describe the shape of the papillae in VKC?

**Cobblestones**

When you hear 'GPC,' what cause/etiology should come immediately to mind?

A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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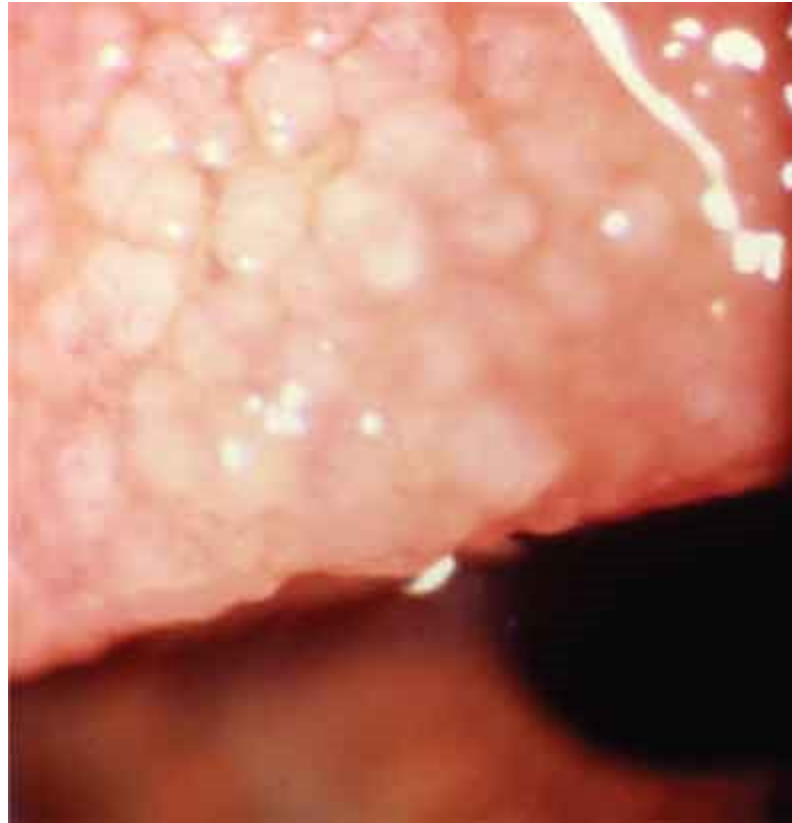
*What word is commonly used to describe the shape of the papillae in VKC?*

**Cobblestones**

*When you hear 'GPC,' what cause/etiology should come immediately to mind?*

Contact-lens wear

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*



CL-induced GPC

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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**Cobblestones**

*When you hear 'GPC,' what cause/etiology should come immediately to mind?*

**Contact-lens wear**

*Is CL-induced GPC a Type IV hypersensitivity reaction like VKC?*

A

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*What word is commonly used to describe the shape of the papillae in VKC?*

**Cobblestones**

*When you hear 'GPC,' what cause/etiology should come immediately to mind?*

**Contact-lens wear**

*Is CL-induced GPC a Type IV hypersensitivity reaction like VKC?*

No, it is an inflammatory response to mechanical trauma/irritation caused by the CL itself

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality:* **VKC** (*vernal* means 'spring'). VKC can be year-round, however.
- *Causes a chronic papillary conjunctivitis:* **Both**
- *Somewhat smaller papillae:* **AKC**
- *Associated with thick ropy discharge:*

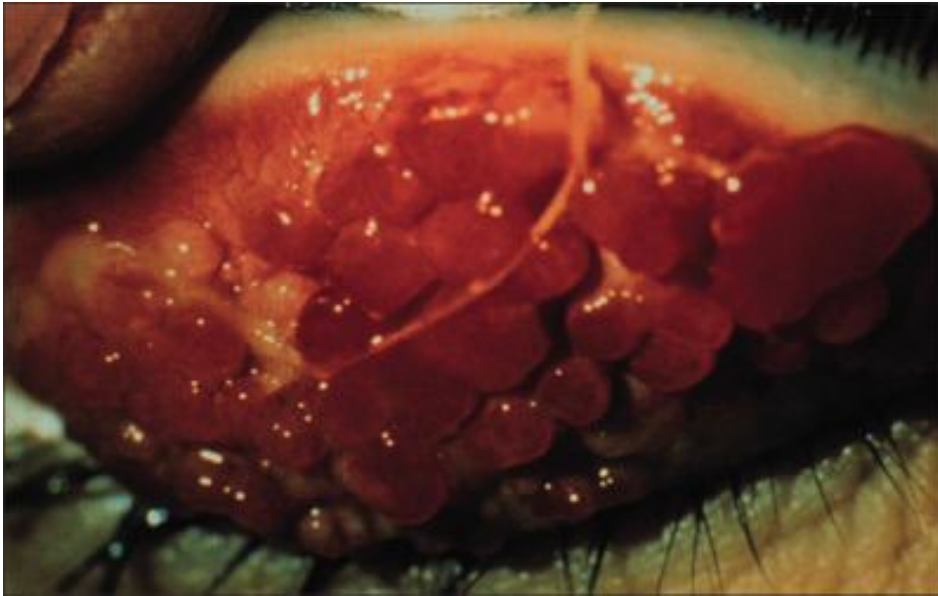
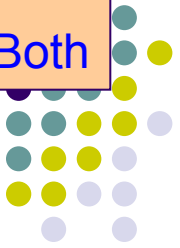


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- *Causes a chronic papillary conjunctivitis:* **Both**
- *Somewhat smaller papillae:* **AKC**
- *Associated with thick ropy discharge:* **VKC**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**



VKC: Ropy discharge

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

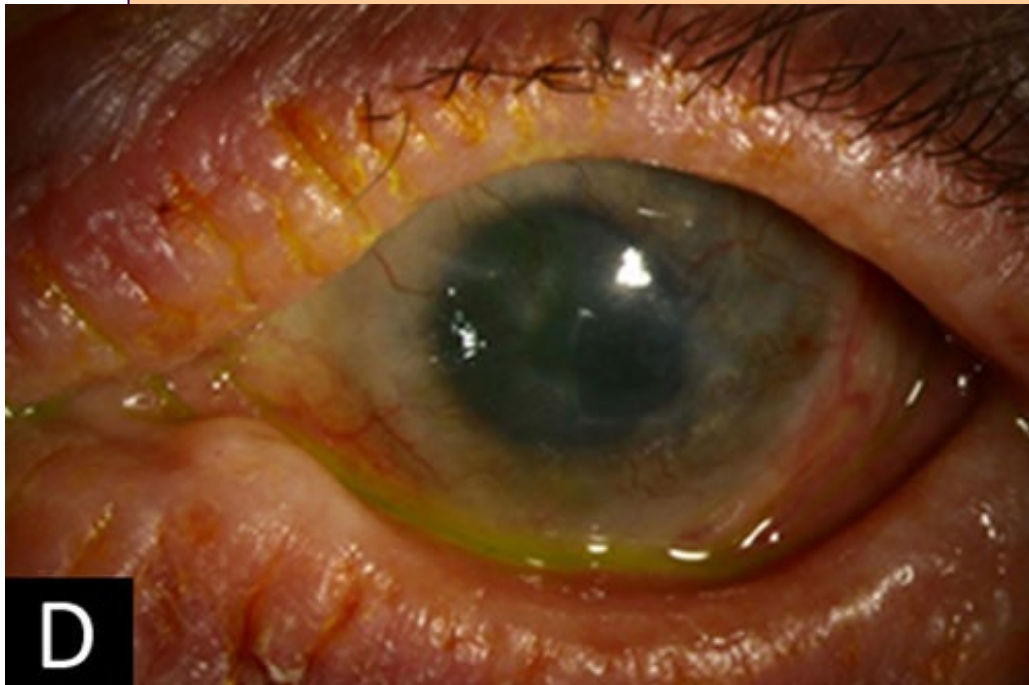
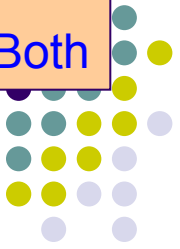
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- *Somewhat smaller papillae:* **AKC**
- *Associated with thick ropy discharge:* **VKC**
- *Lower-lid involvement:*

# A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- *Associated with thick ropy discharge:* **VKC**
- *Lower-lid involvement:* **AKC**. Lower-lid involvement is rare in VKC.

Whether it is associated with  
*Keratoconjunctivitis (AKC)*, or *Both*



AKC

VKC



Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- *Lower-lid involvement:* **AKC**. Lower-lid involvement is rare in VKC.

*To be clear--is the upper lid involved in AKC?*

# A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- *Associated with thick ropy discharge:* **VKC**
- *Lower-lid involvement:* **AKC**. Lower-lid involvement is rare in VKC.

*To be clear--is the upper lid involved in AKC?*

Yes. AKC typically affects both the upper **and** lower lids, whereas VKC typically affects the upper lid only.

Q

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- *Starts before age 10 years:*



**A**

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- *Starts before age 10 years:* **VKC**
- *Associated with a history of atopy:*

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*(But the association is much stronger with AKC)*

Q

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*(Again, the association is much stronger with AKC)*

Q

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*(On the other hand...Just kidding. Once again, the association is much stronger with AKC)*

Q

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*What does the term atopy mean in this context?*



## A

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  - *Starts before age 10 years:* **VKC**
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  - *Associated with asthma:* **Both**
  - *Associated with eczema:* **Both**
- What does the term atopy mean in this context?*  
It means 'genetically predisposed to developing allergic diseases'

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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*What does the term atopy mean in this context?*  
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*What are two classic manifestations of atopy?*

## A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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*What does the term atopy mean in this context?*  
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*What are two classic manifestations of atopy?*  
Asthma and eczema

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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*What does the term atopy mean in this context?*  
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Asthma and eczema

*What is the other common name for eczema?*

A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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*What does the term atopy mean in this context?*  
It means 'genetically predisposed to developing allergic diseases'

*What are two classic manifestations of atopy?*  
Asthma and eczema

*What is the other common name for eczema?*  
Atopic dermatitis

Q

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- *Associated with a history of atopy:* **Both**
- *Associated with asthma:* **Both**
- *Associated with eczema:* **Both**
- *Clumps of degenerated eosinophils and epithelial cells at limbus:*

**A**

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- *Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC***

*'Clumps of degenerated eos/epi cells at limbus'—what eponymous VKC finding is this referring to?*



A

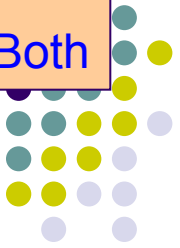
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- *Associated with eczema: Both*
- *Clumps of degenerated eosinophils and epithelial cells at limbus: VKC*

*'Clumps of degenerated eos/epi cells at limbus'—what eponymous VKC finding is this referring to?*

Horner-Trantas dots

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**



VKC: Horner-Trantas dots

Q

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- *Clumps of degenerated eosinophils and epithelial cells at limbus: VKC*

*'Clumps of degenerated eos/epi cells at limbus'—what eponymous VKC finding is this referring to?*

Horner-Trantas dots

*Do Horner-Trantas dots occur in AKC?*

A

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- *Lower-lid involvement: AKC*. Lower-lid involvement is rare in VKC.
- *Starts before age 10 years: VKC*
- *Associated with a history of atopy: Both*
- *Associated with asthma: Both*
- *Associated with eczema: Both*
- *Clumps of degenerated eosinophils and epithelial cells at limbus: VKC*

*'Clumps of degenerated eos/epi cells at limbus'—what eponymous VKC finding is this referring to?*

Horner-Trantas dots

*Do Horner-Trantas dots occur in AKC?*

Yes, but they are uncommon

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- Lower-lid involvement: **AKC**. Lower-lid involvement is rare in VKC.
- Starts before age 10 years: **VKC**

In essence, Horner-Trantas dots are simply papillae that happen to be located at the limbus

- Associated with eczema: **Both**
- Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC**

'Clumps of degenerated eos/epi cells at limbus'—what eponymous VKC finding is this referring to?

**Horner-Trantas dots**

Do Horner-Trantas dots occur in AKC?

Yes, but they are uncommon

Q

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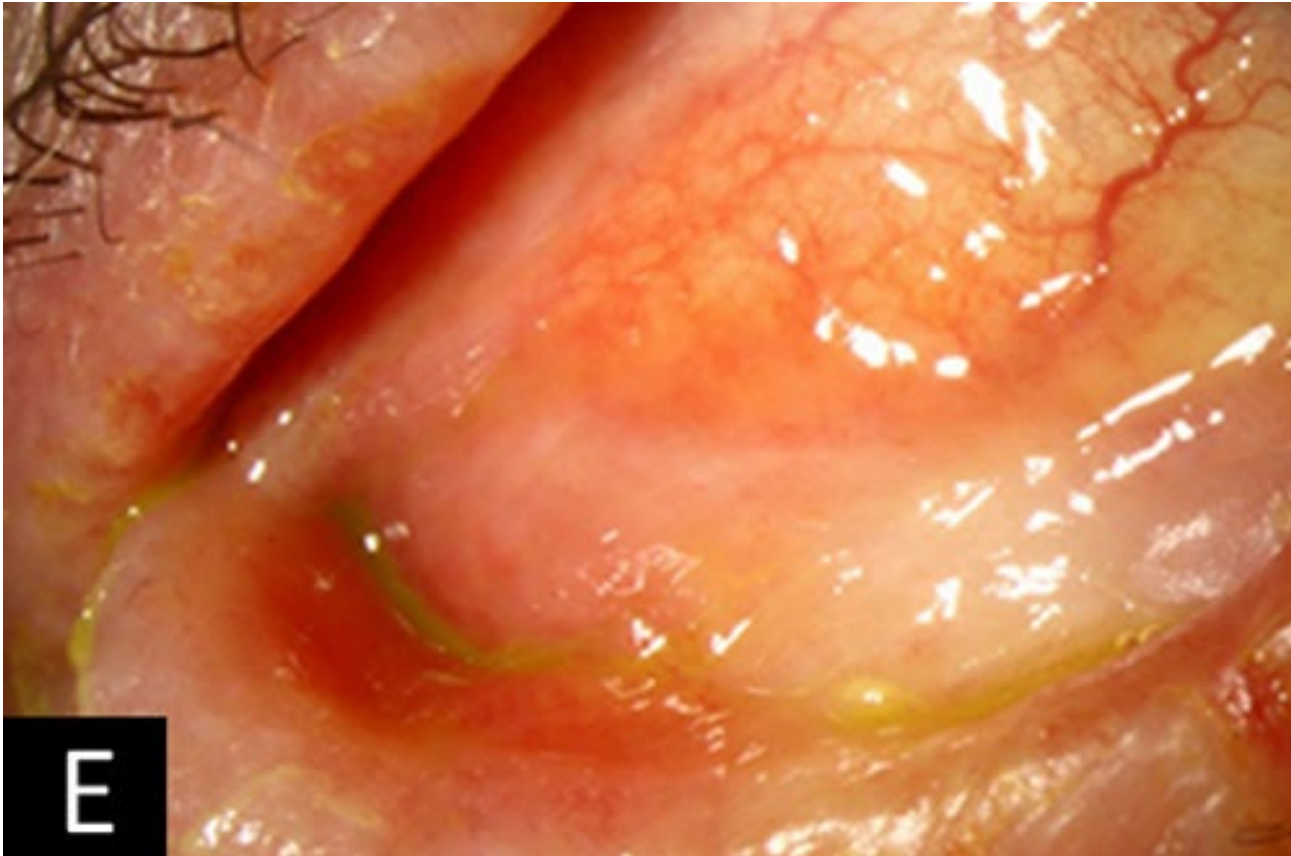
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AKC: Symblephara



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AKC: Corneal neovascularization

Q

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- *Corneal vascularization common:* **AKC**
- *Usually worse in the morning:*



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*What two-word alliterative term is used to capture the AM burden associated with VKC?*

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*'Morning misery'*

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*What two-word alliterative term is used to capture the AM burden associated with VKC?*

**'Morning misery'**. VKC is often so bad upon awakening that the child is unable to go to school.

Q

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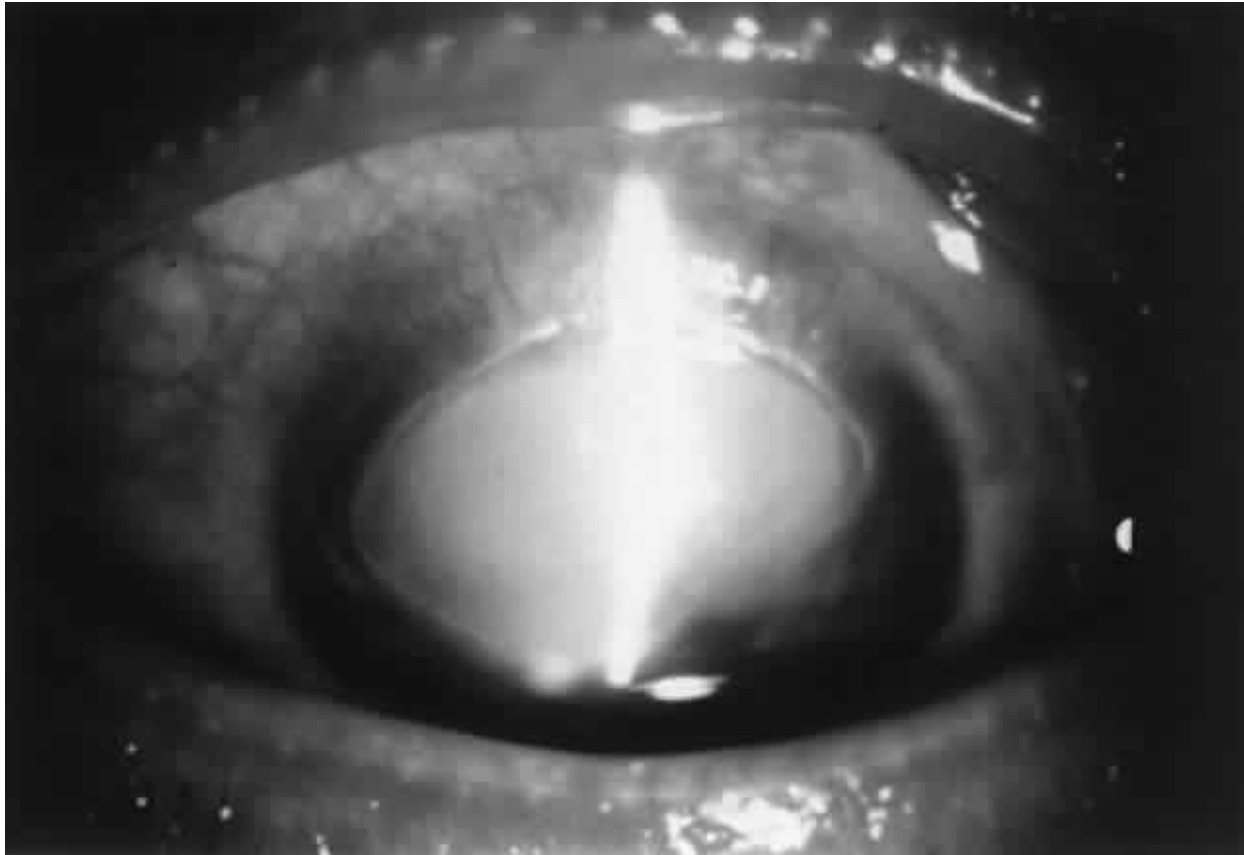
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VKC: Shield ulcer

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VKC.

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- *How do the epithelial staining patterns differ among VKC, AKC and dry-eye syndrome?*
- *--In VKC, staining is usually found in the...*
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- *--In DES, staining is usually found in the...*
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TL;DR: In VKC and AKC, the cornea stains **beneath** the lid that is experiencing inflammation; in DES, the cornea that stains is that which experiences chronic evaporation, ie, **between** the lids

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- *Associated with so-called shield ulcers of the cornea:* **VKC**
- *Associated with cataract formation:*

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- ***What sort of cataracts occur in AKC?***
- *Associated with so-called shield ulcers of the cornea: **VKC***
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- *What sort of cataracts occur in AKC?*  
Subcapsular (either posterior or anterior)
- *Associated with so-called shield ulcers of the cornea: VKC*
- *Associated with cataract formation: AKC*



Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

- *Seasonality: **VKC*** (vernal means 'spring'). VKC can be year-round, however.
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- *Somewhat smaller papillae: **AKC***
- *Associated with thick ropy discharge: **VKC***
- *Lower-lid involvement: **AKC***. Lower-lid involvement is rare in VKC.
- *Starts before age 10 years: **VKC***
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- *Associated with eczema: **Both***
- *Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC***
- *Symblepharon formation: **AKC***. Symblephara are much less common in VKC.
- *What sort of cataracts occur in AKC? **Subcapsular** (either posterior or **anterior**)*

*When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term?*

- *Associated with cataract formation: **AKC***

A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- *What sort of cataracts occur in AKC?* **Subcapsular** (either posterior or **anterior**)

*When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term?*  
*'Shield shaped'*

- *Associated with cataract formation:* **AKC**

## A

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- *What sort of cataracts occur in AKC? Subcapsular* (either posterior or **anterior**)

*When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term? 'Shield shaped'.* So when you encounter the word *shield* in a question concerning keratoconjunctivitis, don't assume it's vernal!

- *Associated with cataract formation: AKC*

Q

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- ***What sort of cataracts occur in AKC?***  
Subcapsular (either posterior or anterior)
- ***Under what circumstance might a VKC pt develop a cataract?***
- *Associated with so-called shield ulcers of the cornea: **VKC***
- *Associated with cataract formation: ~~AKC~~ **VKC***

# Q/A

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

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If management has been heavily reliant upon [redacted]
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- *Associated with cataract formation: ~~AKC~~ **VKC***

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Subcapsular (either posterior or anterior)
- ***Under what circumstance might a VKC pt develop a cataract?***  
If management has been heavily reliant upon topical steroid use
- *Associated with so-called shield ulcers of the cornea: **VKC***
- *Associated with cataract formation: ~~AKC~~ **VKC***

Q

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**

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- Symblepharon formation: **AKC**. Symblephara are much less common in VKC.
- Associated with keratoconus: **Both**. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- Corneal vascularization common: **AKC**
- Usually worse in the morning: **VKC**
- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC**
- Palpebral and limbal forms:

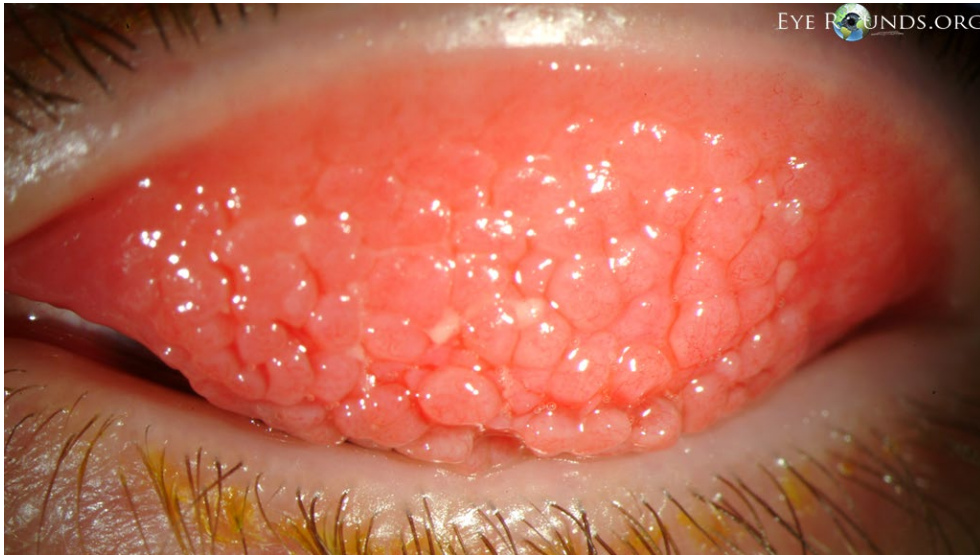
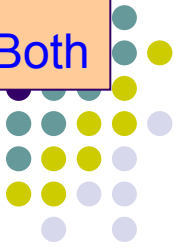
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- Associated with cataract formation: **AKC**
- Palpebral and limbal forms: **VKC**



For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or **Both**



VKC: Palpebral form



VKC: Limbal form

Q

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- *Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC***
- *Symblepharon formation: **AKC***. Symblephara are much less common in VKC.
- *Can the palpebral and limbal forms present simultaneously?*
- 
- 
- 
- 
- 
- Palpebral and limbal forms: **VKC**

For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis* (VKC), *Atopic Keratoconjunctivitis* (AKC), or Both

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- *Symblepharon formation: AKC*. Symblephara are much less common in VKC.
- *Can the palpebral and limbal forms present simultaneously?*
- *Yes*
- *Palpebral and limbal forms: VKC*

Q

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- *Symblepharon formation: **AKC***. Symblephara are much less common in VKC.
- *Can the palpebral and limbal forms present simultaneously?*
- *Yes*
- *Demographically speaking, what sort of pt is more likely to have the limbal form?*
- 
- 
- 
- *Palpebral and limbal forms: **VKC***

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- *Symblepharon formation: **AKC***. Symblephara are much less common in VKC.
- *Can the palpebral and limbal forms present simultaneously?*
- *Yes*
- *Demographically speaking, what sort of pt is more likely to have the limbal form?*
- *Those with more heavily pigmented skin (eg, black; Mediterranean, Asian descent)*
- *Palpebral and limbal forms: **VKC***

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- Corneal vascularization common: **AKC**
- Usually worse in the morning: **VKC**
- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC**
- Palpebral and limbal forms: **VKC**
- Resolves in second decade:

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- *Associated with so-called shield ulcers of the cornea:* **VKC**
- *Associated with cataract formation:* **AKC**
- *Palpebral and limbal forms:* **VKC**
- *Resolves in second decade:* **VKC**. This is a disease of children.



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- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC**
- Palpebral and limbal forms: **VKC**
- Resolves in second decade: **VKC**. This is a disease of children. In contrast, AKC often continues to progress through adulthood.