Coats disease

Classic retinal finding?
Coats disease

White-yellow subretinal exudates
Coats disease

White-yellow subretinal exudates

Two findings are typical of histologic examination of the subretinal exudate—what are they?
Two findings are typical of histologic examination of the subretinal exudate—what are they?

- adjective histocytes
- noun crystals
Two findings are typical of histologic examination of the subretinal exudate—what are they?
Foamy histocytes and cholesterol crystals
Telangiectatic retinal vessels (asterisks) and “foamy” histiocytes (arrowhead) typical of Coats disease

High-magnification of subretinal exudate showing lipid-laden and pigment-laden histiocytes (arrows) and cholesterol clefts (arrowheads).
Two findings are typical of histologic examination of the subretinal exudate—what are they?

**Foamy histocytes and cholesterol crystals**

‘Foamy histiocytes and cholesterol crystals’? Bruh, I’ve read both the Retina and Peds books on Coats, and neither says jack about this. What’s up with the extraneous detail?
Coats disease

Two findings are typical of histologic examination of the subretinal exudate—what are they?

Foamy histocytes and cholesterol crystals

‘Foamy histiocytes and cholesterol crystals’? Bruh, I’ve read both the Retina and Peds books on Coats, and neither says jack about this. What’s up with the extraneous detail? It’s straight outta Path, G—don’t forget about Path
Gender predilection?

Next question

Coats disease

White-yellow subretinal exudates
Gender predilection? Male

Coats disease

White-yellow subretinal exudates
Typical age at presentation?

Gender predilection? Male

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)?

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.

No question—proceed when ready
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Coats disease

White-yellow subretinal exudates
Coats disease

White-yellow subretinal exudates

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

What proportion of cases are male? About 85%

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? Next question

Coats disease
White-yellow subretinal exudates
Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Typical age at presentation? 6-8 years

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern?

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease is sporadic, with no known systemic associations.

No question—proceed when ready
Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Typical age at presentation? 6-8 years

Characterized by the presence of abnormalities of the retinal vasculature

Coats disease

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease

Characterized by the presence of abnormalities of the retinal vasculature

White-yellow subretinal exudates
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease

Characterized by the presence of abnormalities of the retinal vasculature:

White-yellow subretinal exudates

What retinal vasculature abnormalities are commonly present?

The vascular abnormalities lead to…
Typical age at presentation? **6-8 years**

Gender predilection? **Male**

Laterality (ie, bi- vs uni-)? **Unilateral**

Inheritance pattern? **None**

Systemic associations? **None**

Coats disease

Characterized by the presence of abnormalities of the **retinal vasculature:**
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

What retinal vasculature abnormalities are commonly present?

The vascular abnormalities lead to...

Subretinal exudates

White-yellow
Coats: Telangiectasias, venous dilation, microaneurysms
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The retinal vascular abnormalities in Coats disease...

The vascular abnormalities lead to...

White-yellow subretinal exudates

No question—proceed when ready
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to...
The vascular abnormalities lead to... White-yellow subretinal exudates Coats disease

Inheritance pattern? None

Systemic associations? None

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Typical age at presentation? 6-8 years

Laterality (ie, bi- vs uni-)? Unilateral

Characterized by the presence of abnormalities of the retinal vasculature:

--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

There is a variant of Coats in which the retinal vasculature abnormalities are limited to the temporal macula. What is this condition called?

Macular telangiectasia Type I—MacTelI
The vascular abnormalities lead to white-yellow subretinal exudates.

Characterized by the presence of abnormalities of the retinal vasculature:

--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

There is a variant of Coats in which the retinal vasculature abnormalities are limited to the temporal macula. What is this condition called? Macular telangiectasia Type I (MacTel I)

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None
Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

There is a variant of Coats in which the retinal vasculature abnormalities are limited to the temporal macula. What is this condition called?
Macular telangiectasia Type I (MacTel I)

For more on MacTel, see slide-set R53
Inheritance pattern? None

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Typical age at presentation? 6-8 years

Coats disease

Characterized by the presence of abnormalities of the retinal vasculature:

--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to...

If extensive, the exudates lead to...

White-yellow subretinal exudates

two words

Next Q
**Coats disease**

- Typical age at presentation? **6-8 years**
- Gender predilection? **Male**
- Laterality (ie, bi- vs uni-)? **Unilateral**
- Systemic associations? **None**
- Inheritance pattern? **None**

**Characterized by the presence of abnormalities of the retinal vasculature:**
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

*The vascular abnormalities lead to...*

**White-yellow** subretinal exudates

*If extensive, the exudates lead to...*

**Retinal detachment**
Coats disease

- Typical age at presentation? 6-8 years
- Gender predilection? Male
- Laterality (ie, bi- vs uni-)? Unilateral
- Systemic associations? None
- Inheritance pattern? None

Characterized by the presence of abnormalities of the retinal vasculature:
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

The vascular abnormalities lead to...

- White-yellow subretinal exudates
- If extensive, the exudates lead to...
- Retinal detachment
- If massive, the RD can result in...

- two words
Coats disease

- Inheritance pattern? None
- Systemic associations? None
- Gender predilection? Male
- Typical age at presentation? 6-8 years
- Laterality (ie, bi- vs uni-)? Unilateral

Characterized by the presence of abnormalities of the retinal vasculature:
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

If extensive, the exudates lead to...

- White-yellow subretinal exudates

If massive, the RD can result in...

- Retinal detachment
- Leukocoria or xanthocoria
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to…

Coats disease

White-yellow subretinal exudates

If extensive, the exudates lead to…

Retinal detachment

If massive, the RD can result in…

Leukocoria/xanthocoria place

Leukocoria or xanthocoria
**Typical age at presentation?** 6-8 years

**Gender predilection?** Male

**Laterality (ie, bi- vs uni-)?** Unilateral

**Systemic associations?** None

**Inheritance pattern?** None

Coats disease is characterized by the presence of abnormalities of the retinal vasculature:
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

The vascular abnormalities lead to white-yellow subretinal exudates.
If extensive, the exudates lead to retinal detachment.
If massive, the RD can result in leukocoria or xanthocoria.

**Retinoblastoma** is a potential diagnosis in the DDx for leukocoria or xanthocoria.
When it manifests with leukocoria, Coats disease must be differentiated from retinoblastoma.

Characterized by the presence of abnormalities of the retinal vasculature:
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

The vascular abnormalities lead to...

If massive, the RD can result in...

Leukocoria/xanthocoria place Coats on the DDx for...

Leukocoria or xanthocoria

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Gender predilection? Male

Typical age at presentation? 6-8 years

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

White-yellow subretinal exudates

No question—proceed when ready
One child has Coats, the other Rb. Which is which?
Is it Coats, or Rb?
To figure it out, look at the vasculature
In Coats, the retinal vessels are dilated, with microaneurysms and telangiectasias. (Further, the appearance often has a yellow hue.)
In Coats, the retinal vessels are dilated, with microaneurysms and telangiectasias. (Further, the appearance often has a yellow hue.)

Contrast with Rb, in which the retinal vessels are *normal* in appearance. (And the hue tends to be white.)
In Coats, the retinal vessels are dilated, with microaneurysms and telangiectasias. (Further, the appearance often has a yellow hue.)

Contrast with Rb, in which the retinal vessels are normal in appearance. (And the hue tends to be white.)

For more on Coats vs Rb, see slide-set R1.
**Typical age at presentation?** 6-8 years

**Gender predilection?** Male

**Laterality (ie, bi- vs uni-)?** Unilateral

**Systemic associations?** None

**Inheritance pattern?** None

**Management?** Next question

---

Characterized by the presence of abnormalities of the **retinal vasculature:**
- Telangiectasias
- Venous dilation
- Microaneurysms
- Capillary dilation

---

The vascular abnormalities lead to...

**White-yellow** subretinal exudates

If extensive, the exudates lead to...

**Retinal detachment**

If massive, the RD can result in...

---

**Leukocoria or xanthocoria**
**Typical age at presentation?** 6-8 years

**Gender predilection?** Male

**Laterality (ie, bi- vs uni-)?** Unilateral

**Systemic associations?** None

**Inheritance pattern?** None

**Management?** Obliterate the vascular anomalies with cryo or photocoagulation

---

**Leukocoria/xanthocoria place**

---

**Coats disease**

- Characterized by the presence of abnormalities of the retinal vasculature:
  - Telangiectasias
  - Venous dilation
  - Microaneurysms
  - Capillary dilation

- The vascular abnormalities lead to...

- White-yellow subretinal exudates

- If extensive, the exudates lead to...

- Retinal detachment

- If massive, the RD can result in...

---

**Leukocoria or xanthocoria**

---

**Retinoblastoma**
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to...

White-yellow subretinal exudates

If extensive, the exudates lead to...

Retinal detachment

If massive, the RD can result in...

Management? Obliterate the vascular anomalies with cryo or photocoagulation

Retinoblastoma

Leukocoria/xanthocoria place

Coats on the DDx for...

Leukocoria or xanthocoria
Leukocoria or xanthocoria place Coats on the DDx for...

**Retinoblastoma**

*Leukocoria/xanthocoria place Coats on the DDx for...*

Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Characterized by the presence of abnormalities of the retinal vasculature:

--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

Progression of the exudates in Coats disease can be halted by treating the abnormal vessels

The vascular abnormalities lead to...

Management? Obliterate the vascular anomalies with cryo or photocoagulation

When it...

No question—proceed when ready

If massive, the RD can result in...

If extensive, the exudates lead to...

White-yellow subretinal exudates

Retinoblastoma

Progression of the exudates in Coats disease can be halted by treating the abnormal vessels

The vascular abnormalities lead to...

Management? Obliterate the vascular anomalies with cryo or photocoagulation

When it...

No question—proceed when ready

If massive, the RD can result in...

If extensive, the exudates lead to...

White-yellow subretinal exudates

Retinoblastoma
Coats s/p laser
Typical age at presentation? 6-8 years

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Inheritance pattern? None

Coats disease

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to white-yellow subretinal exudates

If extensive, the exudates lead to retinal detachment

Management? Obliterate the vascular anomalies with intravitreal anti-VEGF therapy?

What about intravitreal anti-VEGF injections—are they appropriate?

Leukocoria or xanthocoria
Leukocoria or xanthocoria

Coats disease

Inheritance pattern? None

Gender predilection? Male

Laterality (ie, bi- vs uni-)? Unilateral

Systemic associations? None

Typical age at presentation? 6-8 years

Characterized by the presence of abnormalities of the retinal vasculature:
--Telangiectasias
--Venous dilation
--Microaneurysms
--Capillary dilation

The vascular abnormalities lead to...

White-yellow subretinal exudates

If extensive, the exudates lead to...

Retinal detachment

What about intravitreal anti-VEGF injections—are they appropriate?
The BCSC is unclear on this score. The Retina book says it “may be a useful adjunctive treatment,” but the Peds book pointedly does not endorse it, cautioning it was “associated with a higher incidence” of complications in one study. Caveat emptor.

Management? Obliterate the vascular anomalies with intravitreal anti-VEGF therapy?
Coats Disease: TLDR

No question—proceed when ready
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, exudates.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is inheritance, with yes/no systemic associations.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
Coats Disease: TLDR

- Coats is a disease of **young boys**. It presents with unilateral, subretinal, **white-yellow** exudates.
- It is **sporadic**, with **no** systemic associations.
- The **three words** in Coats disease are responsible for the classic subretinal exudates.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
- The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
- The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.
- When it manifests with a finding, Coats must be differentiated from a disease.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
- The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.
- When it manifests with leukocoria, Coats must be differentiated from retinoblastoma.
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
- The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.
- When it manifests with leukocoria, Coats must be differentiated from retinoblastoma.
- Progression of the exudates can be halted by treating the...
Coats Disease: TLDR

- Coats is a disease of young boys. It presents with unilateral, subretinal, white-yellow exudates.
- It is sporadic, with no systemic associations.
- The retinal vascular abnormalities in Coats disease are responsible for the classic subretinal exudates.
- When it manifests with leukocoria, Coats must be differentiated from retinoblastoma.
- Progression of the exudates can be halted by treating the abnormal vessels.