Comitant Esotropia

In this context, what does the word *comitant* mean?
Comitant Esotropia

In this context, what does the word *comitant* mean? It means the ET is the same in all fields of gaze.
Comitant Esotropia

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*What common cause of ET is effectively ruled out by comitancy?*
Comitant Esotropia

In this context, what does the word **comitant** mean?  
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What common cause of ET is effectively ruled out by comitancy?  
A recent-onset CN6 palsy
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*Why can’t comitancy rule out an ‘old’ CN6 palsy as well?*
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Why can’t comitancy rule out an ‘old’ CN6 palsy as well?
Because of the possibility of ‘spread of comitance’
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What common cause of ET is effectively ruled out by comitancy? A recent-onset CN6 palsy.

Why can’t comitancy rule out an ‘old’ CN6 palsy as well? Because of the possibility of ‘spread of comitance’.

What is spread of comitance?
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*What is spread of comitance?*  
The phenomena in which a longstanding palsy gradually transforms from incomitant to comitant
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*Is there a gender predilection for comitant ET?*
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*There is a predilection pattern among US whites, blacks and Asians—what is it?*
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Is there a gender predilection for comitant ET?
No

There is a predilection pattern among US whites, blacks and Asians—what is it?
White = black > Asian
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Is there a gender predilection for comitant ET?
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There is a predilection pattern among US whites, blacks and Asians—what is it?
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Which is more common: comitant ET, or comitant XT?
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No

There is a predilection pattern among US whites, blacks and Asians—what is it?
White = black > Asian

Which is more common: comitant ET, or comitant XT?
ET is significantly more common
Comitant Esotropia

Comitant esotropia
Comitant Esotropia

Comitant esotropia

Congenital (onset < before age…)

Acquired (onset > after age…)

Congenital (onset < before age…)

Acquired (onset > after age…)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)
Comitant Esotropia

Why is the term congenital a misnomer here?
Comitant Esotropia

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Technically, a congenital disorder must be present at birth—it can’t show up 6 months later.
Comitant Esotropia

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For this reason, some clinicians refer to these ETs not as ‘congenital,’ but as what?
Why is the term *congenital* a misnomer here?
Technically, a congenital disorder must be present at birth--it can’t show up 6 months later

*For this reason, some clinicians refer to these ETs not as ‘congenital,’ but as what?*

*Infantile* esotropia
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).

They call back a week later to report they observed his eyes “turning out [going XT] for a second.” As this represented a change from the transient ET they saw previously, they were concerned. Should you be?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Worried parents call your office to say they observed their two-month-old child’s eyes cross briefly. Should you be concerned?
Not necessarily. Brief strabismic episodes are commonly seen in the first few months of life. Tell them it’s probably nothing, but to keep an eye on it (so to speak).

They call back a week later to report they observed his eyes “turning out [going XT] for a second.” As this represented a change from the transient ET they saw previously, they were concerned. Should you be?
Probably not. It’s not uncommon for the same infant to display brief episodes of both ET and XT (it’s referred to as ocular instability of infancy).
Comitant Esotropia

Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?

If the ET is...

--

--

--

...it probably represents a congenital ET needing treatment
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Given that episodic strabismus is common in infancy, at what **should** make you worry that the infant has a congenital ET?

If the ET is…

--present after age # months;
--constant; and
--large (defined as greater than #Δ),

…it probably represents a congenital ET needing treatment
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

*Given that episodic strabismus is common in infancy, at what should make you worry that the infant has a congenital ET?*

If the ET is…
--present after age 2 months;
--constant; and
--large (defined as greater than 30Δ),

…it probably represents a congenital ET needing treatment
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

*Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?*
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Congenital ET puts the infant at significant risk of suffering what (very broad) category of non-ophthalmic disease as an adult?
Mental illness. Congenital ET confers a risk ratio of 2.6! (How or why, I have no idea).
Comitant Esotropia

- Comitant esotropia
  - Congenital (onset < age 6 m)
  - Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

- With Nystagmus
- Without Nystagmus
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus
Comitant Esotropia

Comitant esotropia

Congenital (onset < **age 6 m**)  
Acquired (onset > **age 6 m**)  

With Nystagmus  
Without Nystagmus  

- Nystagmus blockage syndrome  
- Latent nystagmus  
- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)      Acquired (onset > age 6 m)

With Nystagmus               Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Accommodative               Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Nystagmus blockage syndrome
Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive  Nonrefractive
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative
    - Refractive
    - Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)           Acquired (onset > age 6 m)

With Nystagmus                          Without Nystagmus

With Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome

Accommodative

Nonaccommodative

Refractive

Nonrefractive

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Nonrefractive Comitant Esotropia

With Nystagmus

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Nystagmus blockage syndrome
--Arises in pts with…[a nystagmus syndrome]

--Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
--Key exam finding: Pt 'eats up' prism when deviation is being measured

Accommodative  Nonaccommodative

-Basic
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Refractive  Nonrefractive

Nystagmus blockage syndrome
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Comitant Esotropia

**Comitant esotropia**

- **Congenital (onset < age 6 m)**
  - Nystagmus blockage syndrome
    - Arises in pts with...congenital motor nystagmus (CMN)
    - Pt 'learns' that their nystagmus is decreased (and thus acuity is increased) when their eyes are converged
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- **Acquired (onset > age 6 m)**
  - Accommodative
  - Nonaccommodative
    - Basic
    - Acute
    - Deprivation
    - Divergence insufficiency
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    - Consecutive
    - Cyclic

- **Refractive**
- **Nonrefractive**
Comitant Esotropia

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Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Nystagmus blockage syndrome
--Arises in pts with...

congenital motor nystagmus (CMN)

Briefly, what is congenital motor nystagmus?

A nystagmus arising in the first few months of life that is not secondary to either sensory or CNS pathology

Is the nystagmus vertical, horizontal or both/either?

It is virtually always horizontal

Do CMN pts usually have good vision, or poor?

Good (rule of thumb: If a pt has nystagmus + good VA, it's CMN)

CMN has a unique finding related to an exam maneuver you're familiar with but don't perform very often. What is this finding?

A paradoxical OKN response
Comitant Esotropia

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Nystagmus blockage syndrome

Arises in pts with...

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---

46

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Nystagmus blockage syndrome

Earls in pts with...

**congenital motor nystagmus (CMN)**
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简要地，什么是先天性运动性眼球震颤？
一种在生命最初几个月出现的不伴后天感与中枢神经系统病理的抖动。

眼球震颤是垂直、水平还是两者或其中之一？
它几乎总是水平的。
Comitant Esotropia

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Congenital (onset < age 6 m) -- Acquired (onset > age 6 m)

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CMN has a unique finding related to an exam maneuver you’re familiar with but don’t perform very often. What is this finding? A paradoxical OKN response.
Comitant Esotropia

What does ‘OKN’ stand for in this context?

A paradoxical OKN response

A paradoxical OKN response
Comitant Esotropia

What does ‘OKN’ stand for in this context?
Optokinetic nystagmus

A paradoxical OKN response
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To what does ‘optokinetic nystagmus response’ refer?

A paradoxical OKN response
Comitant Esotropia

What does ‘OKN’ stand for in this context?
Optokinetic nystagmus

To what does ‘optokinetic nystagmus response’ refer?
To the phenomenon in which the presentation of a series of visual stimuli moving rapidly through the visual field induces the eyes to pursue (ie, follow) a stimulus, then engage in a rapid return saccade to pick up the next stimulus.

A paradoxical OKN response

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How is OKN testing performed?

A paradoxical OKN response

When a CMN pt is presented with an OKN drum spinning in the direction congruent with the pt’s nystagmus, spinning in this direction would be expected to amplify (ie, worsen) the pt’s nystagmus. However, in a CMN pt the presentation of congruent OKN movement produces a dampening or even reversal of the nystagmus—hence the term paradoxical OKN response.
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How is OKN testing performed?
Usually with an OKN drum that is spun about its axis

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Nystagmus blockage syndrome

--Arises in pts with…congenital motor nystagmus (CMN)

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are…[

'direction’ of gaze]

Nystagmus blockage syndrome

--Latent nystagmus

--Ciancia syndrome

Refractive

Nonrefractive

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Nonrefractive Comitant Esotropia

With Nystagmus

Nystagmus blockage syndrome
--Arises in pts with...congenital motor nystagmus (CMN)
--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged

Refractive

Nonre refractive

Basic
Acute
Deprivation
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Spasm of the near
Consecutive
Cyclic

Acquired (onset > age 6 m)

Congenital (onset < age 6 m)
Comitant Esotropia

**Comitant esotropia**

**Congenital (onset < age 6 m)**
- **Nystagmus blockage syndrome**
  - Arises in pts with congenital motor nystagmus (CMN)
  - Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are converged
  - Key exam finding: Pt ‘eats up’ prism when deviation is being measured

  - **Nystagmus blockage syndrome**
    - Latent nystagmus
    - Ciancia syndrome

  - **Refractive**
  - **Nonrefractive**

**Acquired (onset > age 6 m)**
- Basic
- Acute
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Comitant Esotropia

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Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Refractive

Nonrefractive

Basic

Acute

Deprivation

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Cyclic
What does it mean to say the pt ‘eats up’ prism?

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Nystagmus blockage syndrome
- Latent nystagmus
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Refractive
Nonrefractive

- Basic
- Acute
- Deprivation
- Divergence insufficiency
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- Consecutive
- Cyclic
What does it mean to say the pt ‘eats up’ prism?
It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
--Key exam finding: Pt ‘eats up' prism when deviation is being measured

Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive Nonrefractive

Basic
Acute
Deprivation
Divergence insufficiency
Spasm of the near
Consecutive
Cyclic
Comitant Esotropia

What does it mean to say the pt ‘eats up’ prism?
It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

Why do NBS pts eat up prism?

--Pt ‘learns’ that their nystagmus is decreased (and thus acuity is increased) when their eyes are...converged
--Key exam finding: Pt ‘eats up’ prism when deviation is being measured

Nystagmus blockage syndrome

- Latent nystagmus
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Refractive
Nonrefractive

Acute
Deprivation
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Consecutive
Cyclic

Basic
**Comitant Esotropia**

*What does it mean to say the pt ‘eats up’ prism?*

It means that, when attempting to quantify the size of the esotropia with prisms, the clinician finds the pt needs progressively more prism to neutralize the ET. So, eg, a child who initially requires 20PD might shortly thereafter be found to need 35, and after receiving 35 is found to need 50. (You can see how such a child is being said to ‘eat up’ prism.)

*Why do NBS pts eat up prism?*

Recall we said these pts often see better in the converged state, and that this improvement in VA is why their visual system adopts an esotropic orientation in the first place. Apparently, if their ET is neutralized with prism, this short-circuits the VA benefit they gained from converging. Thus, if their ET is neutralized with prism, re-acquiring improved VA requires the system to crank in even more convergence, and thus the child becomes clinically more esotropic. And if/when that ET is neutralized, the child will crank in even more convergence. In this manner the prism gets ‘et up.’

---Pt ‘learns’ that their **nystagmus is decreased (and thus acuity is increased)** when their eyes are...**converged**

---Key exam finding: Pt **‘eats up’ prism** when deviation is being measured

---Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

---Refractive
---Nonrefractive

---Basic
---Acute
---Deprivation
---Divergence insufficiency
---Spasm of the near
---Consecutive
---Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus

With Nystagmus

With Nystagmus

Latent nystagmus
--No nystagmus when vision is… [status]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Latent nystagmus

-- No nystagmus when vision is... binocular
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Latent nystagmus

--No nystagmus when vision is...binocular

--When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating vs occluded eye

Without Nystagmus

-Nystagmus blockage syndrome

-Condensing nystagmus

Acquired (onset > age 6 m)

Deprivation

Acute

Basic

Consecutive

Spasm of the near

Divergence insufficiency

Cyclic

Ciancia syndrome

Latent nystagmus

--No nystagmus when vision is...binocular

--When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating vs occluded eye
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus

Acquired (onset > age 6 m)

- With Nystagmus
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus

Latent nystagmus

- No nystagmus when vision is binocular
- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Latent nystagmus

--No nystagmus when vision is...binocular
--When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
--Sounds like an oxymoron...
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

---Nystagmus blockage syndrome
---Latent nystagmus
---Ciancia syndrome

---Manifest latent nystagmus

Latent nystagmus
--No nystagmus when vision is...binocular
--When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
--Sounds like an oxymoron...
--Nystagmus present when both eyes are open but one is...[temporary vision status]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

**Latent nystagmus**
-- No nystagmus when vision is...binocular
-- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

**Manifest latent nystagmus**
-- Sounds like an oxymoron...
-- Nystagmus present when both eyes are open but one is...suppressed
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus
- Latent nystagmus
  - Ciancia syndrome
- Nystagmus blockage syndrome

Without Nystagmus

Latent nystagmus
- No nystagmus when vision is binocular
- When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

Manifest latent nystagmus
- Sounds like an oxymoron...
- Nystagmus present when both eyes are open but one is...suppressed

Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name?

Fusion maldevelopment nystagmus syndrome (FMNS)
Comitant Esotropia

**Comitant esotropia**

**Congenital (onset < age 6 m)**

- **With Nystagmus**
  - Latent nystagmus
  - Ciancia syndrome

- **Without Nystagmus**

**Acquired (onset > age 6 m)**

- **Deprivation**
  - Acute
  - Basic
  - Consecutive
  - Spasm of the near
  - Divergence insufficiency
  - Cyclic
- **Ciancia syndrome**
- **Latent nystagmus**
  - No nystagmus when vision is binocular
  - When one eye occluded, jerk nystagmus occurs with the fast phase toward the fixating eye

- **Manifest latent nystagmus**
  - Sounds like an oxymoron...
  - Nystagmus present when both eyes are open but one is... **suppressed**

**Latent nystagmus and manifest latent nystagmus are sometimes referred to by what single name?**
**Fusion maldevelopment nystagmus syndrome (FMNS)**
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative
    - Basic
    - Acute
      - Spasm of the near
        - Divergence insufficiency
        - Cyclic

Ciancia syndrome
-- Deviation tends to be... [magnitude]
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
  - With Nystagmus
    - Nystagmus blockage syndrome
    - Latent nystagmus
    - Ciancia syndrome
  - Without Nystagmus
- Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative
    - Basic Acute
    - Spasm of the near Divergence insufficiency
    - Cyclic

Ciancia syndrome
-- Deviation tends to be... very large
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative
  - Basic Acute
  - Consecutive
  - Spasm of the near
  - Divergence insufficiency
  - Cyclic

- Nonaccommodative

Ciancia syndrome
-- Deviation tends to be… very large

How large is ‘very large’?

Greater than 50 \( \Delta \)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Accommodative

- Basic
- Acute

Nonaccommodative

Consecutive

Spasm of the near

Divergence insufficiency

Cyclic

Ciancia syndrome

-- Deviation tends to be... very large

How large is 'very large'?
Greater than 50Δ
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Ciancia syndrome
    -- Deviation tends to be ... very large
    -- Nystagmus increases when the fixating eye ... [abducts vs adducts]
    -- Nystagmus decreases when it ... [abducts vs adducts]

- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative

- Nonaccommodative
  - Basic
  - Acute
  - Consecutive
  - Spasm of the near
  - Divergence insufficiency
  - Cyclic
  - Nystagmus blockage syndrome
  - Latent nystagmus

Ciancia syndrome

---
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
  - Acute
  - Cyclic

Ciancia syndrome
- Deviation tends to be...very large
- Nystagmus increases when the fixating eye...abducts;
  decreases when it...aducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

**Nystagmus blockage syndrome**
- Damped when the eyes are...converged
- *Nystagmus appears upon attempted...abduction*

**Ciancia syndrome**
- Deviation tends to be...very large
- *Nystagmus increases when the fixating eye...abducts;* decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of [two words] for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus)

--- Nystagmus blockage syndrome
--Damped when the eyes are...converged
--Nystagmus appears upon attempted...abduction

--- Ciancia syndrome
--Deviation tends to be...very large
--Nystagmus increases when the fixating eye...abducts; decreases when it...abducts

--- Latent nystagmus

--- Basic

--- Acute

--- Cyclic
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus)

**Nystagmus blockage syndrome**
- Damped when the eyes are converged
- Nystagmus appears upon attempted abduction

**Ciancia syndrome**
- Deviation tends to be very large
- Nystagmus increases when the fixating eye abducts; decreases when it adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:
--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense *caused* by the nystagmus). In contrast,
--The Ciancia syndrome is a type of congenital esotropia in which the ET *just happens* to be associated with a nystagmus that manifests in attempted abduction.

*Nystagmus blockage syndrome*
--Damped when the eyes are...converged
--Nystagmus appears upon attempted...abduction

*Ciancia syndrome*
--Deviation tends to be...very large
--Nystagmus increases when the fixating eye...abducts;
decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

-- The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense *caused* by the nystagmus). In contrast,

-- The Ciancia syndrome is a type of congenital esotropia in which the ET *just happens* to be associated with a nystagmus that manifests in attempted abduction.

**Nystagmus blockage syndrome**

-- Damped when the eyes are...converged

**Nystagmus appears upon attempted...abduction**

**Ciancia syndrome**

-- Deviation tends to be...very large

**Nystagmus increases when the fixating eye...abducts;**

decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of **congenital nystagmus** for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

--The Ciancia syndrome is a type of **congenital esotropia** in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.

So, **NBS** is a congenital nystagmus pretending to be a congenital esotropia, whereas **Ciancia syndrome** is a congenital esotropia with an overlay of congenital nystagmus.

**Ciancia syndrome**
--Deviation tends to be...very large
--**Nystagmus increases when the fixating eye...abducts;** decreases when it...adducts

**Nystagmus blockage syndrome**
--Damped when the eyes are...converged
--**Nystagmus appears upon attempted...abduction**
Comitant Esotropia

Note that both NBS and Ciencia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?
Think of these disorders this way:
--The NBS is a type of congenital nystagmus for which the **null point** is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,
--The Ciencia syndrome happens to be associated

**What is a null point?**

Nystagmus blockage syndrome
--Damped when the eyes are...converged
**--Nystagmus appears upon attempted...abduction**

Ciencia syndrome
--Deviation tends to be...very large
**--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts**
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

--The Ciancia syndrome happens to be associated with an esotropia that just happens to be associated with nystagmus that manifests in attempted abduction.

**What is a null point?**
A direction of gaze in which the intensity of the nystagmus is minimized.

**Nystagmus blockage syndrome**
--Damped when the eyes are...converged

--Nystagmus appears upon attempted...abduction

**Ciancia syndrome**
--Deviation tends to be...very large

--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense *caused* by the nystagmus). In contrast, ...

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

With Nystagmus

--Damped when the eyes are...converged

--Nystagmus appears upon attempted...abduction

Nystagmus blockage syndrome

Latent nystagmus

Ciancia syndrome

--Deviation tends to be...very large

--Nystagmus increases when the fixating eye...abducts;
decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these? Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,

- **Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?**
  - Pupillary constriction **may** accompany the convergence

With Nystagmus

--Damped when the eyes are...converged

-Nystagmus appears upon attempted...abduction

--- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Ciancia syndrome

--Deviation tends to be...very large

- **Nystagmus increases when the fixating eye...abducts**;
  decreases when it...adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (ie, the ET is in a sense caused by the nystagmus). In contrast,

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

- Pupillary constriction **may** accompany the convergence

**May**? Why the hedging?

With Nystagmus

--Damped when the eyes are…converged

--Nystagmus appears upon attempted…abduction

Nystagmus blockage syndrome

- Latent nystagmus

Ciancia syndrome

- Deviation tends to be…very large

--Nystagmus increases when the fixating eye…abducts;
decreases when it…adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:

--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,

Given that the ET in NBS stems from convergence, what other signs **may** be present to clue you in that you’re dealing with NBS and not Ciancia syndrome?

Pupillary constriction **may** accompany the convergence

**May**? Why the hedging?

Some infants with NBS ‘learn’ to decouple their near-response triad, so miosis (as well as accommodation) are not a universal finding in NBS

With Nystagmus

--Damped when the eyes are…converged

--Nystagmus appears upon attempted…abduction

Nystagmus blockage syndrome

- Latent nystagmus

Ciancia syndrome

--Deviation tends to be…very large

--Nystagmus increases when the fixating eye…abducts; decreases when it…adducts
Comitant Esotropia

Note that both NBS and Ciancia syndrome present with ET and nystagmus on attempted abduction. Given this, how can you differentiate between these?

Think of these disorders this way:
--The NBS is a type of congenital nystagmus for which the null point is located in convergence (i.e., the ET is in a sense caused by the nystagmus). In contrast,
--The Ciancia syndrome is a type of congenital esotropia in which the ET just happens to be associated with a nystagmus that manifests in attempted abduction.

Finally, note also that the magnitude of the ET tends to be much larger in Ciancia syndrome than the NBS. So for purposes of the Boards and/or OKAP, an infant with nystagmus and ≤35PD* of congenital ET probably has NBS, whereas an infant with nystagmus and ≥55PD of congenital ET likely has Ciancia syndrome.

Nystagmus blockage syndrome

--Deviation tends to be very large
--Nystagmus increases when the fixating eye...abducts; decreases when it...adducts

*Prior to ‘eating up prism’
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) vs Acquired (onset > age 6 m)

With Nystagmus vs Without Nystagmus

Congenital ET without nystagmus
-- Family history usually... [present vs absent]

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive vs Nonrefractive
- Consecutive
- Cyclic

Deprivation
- Acute
- Basic
- Consecutive
- Spasm of the near
- Divergence insufficiency

Management:
- Prescribe full... cycloplegic refraction
- Perform bilateral... MR recession
- Best if by age... 24 months
- If IO overaction present, consider... weakening
Comitant Esotropia

- Comitant esotropia
  - Congenital (onset < age 6 m)
    - With Nystagmus
    - Without Nystagmus
      - Nystagmus blockage syndrome
      - Latent nystagmus
      - Ciancia syndrome
  - Acquired (onset > age 6 m)

**Congenital ET without nystagmus**
--Family history usually present

Management:
--Prescribe full cycloplegic refraction
--Perform bilateral MR recession
--Best if by age 24 months
--If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus
-- Family history usually... present
-- Deviation tends to be... [magnitude]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus

- Family history usually...present
- Deviation tends to be...large

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive
- Consecutive
- Cyclic

Nonrefractive
Comitant Esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciencia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
-- Family history usually... present
-- Deviation tends to be... large

Management:
-- Prescribe full... cycloplegic refraction
-- Perform bilateral... MR recession
-- Best if by age... 24 months
-- If IO overaction present, consider... weakening

How large is 'large'? Greater than 30°
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large

Nystagmus blockage syndrome
Latent nystagmus
Ciancia syndrome

Refractive
Nonrefractive

Consecutive
Cyclic

How large is 'large'? Greater than 30Δ
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually present
--Deviation tends to be large

If a congenital ET is subtle, what should you infer?

Congenital ET with nystagmus

Nystagmus blockage syndrome
Latent nystagmus
Ciancia syndrome

Refractive

Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Comitant esotropia

Deprivation

Acute
Basic
Consecutive
Spasm of the near
Divergence insufficiency
Cyclic

Ciancia syndrome
Latent nystagmus
Nystagmus blockage syndrome

Management:
--Prescribe full cycloplegic refraction
--Perform bilateral MR recession
--Best if by age 24 months
--If IO overaction present, consider weakening

If a congenital ET is subtle, what should you infer?

It's not a congenital ET (they're not subtle)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus

-- Family history usually... present
-- Deviation tends to be... large

If a congenital ET is subtle, what should you infer?
It’s not a congenital ET (ie, they’re not subtle)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large

If a congenital ET is subtle, what should you infer? It's not a congenital ET (ie, they’re not subtle)

What is the exception to this?

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually…present
- Deviation tends to be…large

If a congenital ET is subtle, what should you infer? It’s not a congenital ET (ie, they’re not subtle)

What is the exception to this? ET in preemies—their congenital ET can be small-angle

Management:
- Prescribe full…cycloplegic refraction
- Perform bilateral…MR recession
- Best if by age…24 months
- If IO overaction present, consider…weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus

--Family history usually present
--Deviation tends to be large
--Cross fixation [may be present?]

Management:
--Prescribe full cycloplegic refraction
--Perform bilateral MR recession
--Best if by age 24 months
--If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

**Congenital ET without nystagmus**

-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present

Management:

-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age 24 months
-- If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually present
- Deviation tends to be large
- Cross fixation may be present

What does this imply about VA?

It tends to be equal OU

Is amblyopia common?

No
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  - Congenital ET without nystagmus
    -- Family history usually...present
    -- Deviation tends to be...large
    -- Cross fixation...may be present

Acquired (onset > age 6 m)
- Deprivation
- Acute
- Basic
- Consecutive
- Spasm of the near Divergence insufficiency
- Cyclic

Congenital ET without nystagmus
What does this imply about VA?
It will be equal OU

What exam finding is key to determining whether the infant’s vision is equal bilaterally?
Comitant Esotropia

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Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)
- Congenital ET without nystagmus
  -- Family history usually...present
  -- Deviation tends to be...large
  -- Cross fixation...may be present
- Accommodative
- Nonaccommodative
- Refractive
- Nonrefractive

Management:
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening

What does this imply about VA?
It will be equal OU

What exam finding is key to determining whether the infant’s vision is equal bilaterally?
If it isn’t, the infant will display a gaze preference for the better-seeing eye
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Congenital ET without nystagmus
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Management:
- Prescribe full cycloplegic refraction
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What exam finding is key to determining whether the infant’s vision is equal bilaterally?
If it isn’t, the infant will display a gaze preference for the better-seeing eye
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Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

What does this imply about VA?
It will be equal OU

Is amblyopia common?

Management:
--Prescribe full...cycloplegic refraction--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...weakening

Refractive Nonrefractive

Deprivation Acute

Basic

Consecutive

Spasm of the near

Divergence insufficiency

Cyclic

Ciancia syndrome

Latent nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

What does this imply about VA?
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Is amblyopia common?
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- Without Nystagmus

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What does this imply about VA?
It will be equal OU

Is amblyopia common?
Yes
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)    Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

If amblyopia is present:
--will vision be equal OU?

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

Is amblyopia common?
Yes

What does this imply about VA?
It tends to be equal OU?
Is amblyopia common?
Yes

If amblyopia is present:
--will vision be equal OU?
Comitant Esotropia

Comitant esotropia

Congenital (onset < \textit{age 6 m})

Acquired (onset > \textit{age 6 m})

Without Nystagmus

With Nystagmus

Congenital ET without nystagmus

--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

If amblyopia is present:
--will vision be equal OU? \textbf{No}
--...

Is amblyopia common?

Yes

No

What does this imply about VA?

It tends to be equal OU?

No

Is amblyopia common?

Yes

No

If amblyopia is present:
--will vision be equal OU? \textbf{No}
--Will a gaze preference be present?
Yes

No

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus

--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

If amblyopia is present:
--will vision be equal OU? No
--Will a gaze preference be present?

Consecutive

Spasm of the near

Divergence insufficiency

Cyclic

Ciancia syndrome

Latent nystagmus

Congenital ET without nystagmus

--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present

If amblyopia is present:
--will vision be equal OU? No
--Will a gaze preference be present?

Is amblyopia common? Yes

Refractive

Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- Without Nystagmus
  - With Nystagmus
    - Without Nystagmus
      - Congenital ET without nystagmus
        -- Family history usually present
        -- Deviation tends to be large
        -- Cross fixation may be present

If amblyopia is present:
- Will vision be equal OU? No
- Will a gaze preference be present? Yes

Acquired (onset > age 6 m)
- With Nystagmus
- Latent nystagmus
- Ciancia syndrome

Refractive
- Acute
- Basic
- Consecutive
- Spasm of the near
- Divergence insufficiency
- Cyclic

Ciancia syndrome
- Latent nystagmus
- Nystagmus blockage syndrome

Congenital ET without nystagmus
- Family history usually present
- Deviation tends to be large
- Cross fixation may be present

If amblyopia is present:
- Will vision be equal OU? No
- Will a gaze preference be present? Yes

Is amblyopia common? Yes
Comitant Esotropia

Concomitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)
- Congenital ET without nystagmus
  -- Family history usually present
  -- Deviation tends to be large
  -- Cross fixation may be present
  -- 2/3 with concomitant [strabismic conditions]

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
  -- Family history usually... present
  -- Deviation tends to be... large
  -- Cross fixation... may be present
  -- 2/3 with concomitant... DVD and IO overaction

Management:
  -- Prescribe full... cycloplegic refraction
  -- Perform bilateral... MR recession
  -- Best if by age... 24 months
  -- If IO overaction present, consider... weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

In this context, what do DVD and IO stand for?

**DVD:**

**IO:**
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Nystagmus blockage syndrome  Latent nystagmus  Ciancia syndrome

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

In this context, what do DVD and IO stand for?
DVD: Dissociated vertical deviation
IO: Inferior oblique (muscle)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually…present
--Deviation tends to be…large
--Cross fixation…may be present
--2/3 with concomitant…DVD and IO overaction

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

Refractory

- Consecutive
- Cyclic

Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Management:
--Prescribe full…cycloplegic refraction
--Perform bilateral…MR recession
--Best if by age…24 months
--If IO overaction present, consider…weakening
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Acquired (onset > age 6 m)

Deprivation

Acute

Basic

Consecutive

Spasm of the near

Divergence insufficiency

Cyclic

Ciancia syndrome

Latent nystagmus

Congenital ET without nystagmus

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

DVD violates Hering’s law; IO overaction doesn’t

Management:

--Prescribe full...cycloplegic refraction

--Perform bilateral...MR recession

--Best if by age...24 months

--If IO overaction present, consider...weakening

Both DVD and IO overaction involve elevation and extorsion.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)

- Congenital ET without nystagmus
  -- Family history usually present
  -- Deviation tends to be large
  -- Cross fixation may be present
  -- 2/3 with concomitant DVD and IO overaction

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated? DVD violates Hering’s law; IO overaction doesn’t

What does this mean, exactly?

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

Both DVD and IO overaction involve elevation and extorsion.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Both DVD and IO overaction involve elevation and extorsion. How can they be differentiated?

DVD violates Hering’s law; IO overaction doesn’t

What does this mean, exactly?
When an eye that is elevated by IO overaction depresses, the fellow eye obeys Hering’s law and depresses as well. This doesn’t happen in DVD.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus
  - Congenital ET without nystagmus
    -- Family history usually present
    -- Deviation tends to be large
    -- Cross fixation may be present
    -- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age 24 months
-- If IO overaction present, consider weakening

Acquired (onset > age 6 m)
- With Nystagmus
  - Divergence insufficiency
  - Cyclic
  - Ciancia syndrome
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome

Recurrent esotropia
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
--Family history usually…present
--Deviation tends to be…large
--Cross fixation…may be present
--2/3 with concomitant…DVD and IO overaction

Management:
--Prescribe full…cycloplegic refraction
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

- Congenital ET without nystagmus
  -- Family history usually present
  -- Deviation tends to be large
  -- Cross fixation may be present
  -- 2/3 with concomitant DVD and IO overaction

Management:
  -- Prescribe full cycloplegic refraction

Why prescribe the full CR?

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

Congenital ET without nystagmus
- Family history usually…present
- Deviation tends to be…large
- Cross fixation…may be present
- 2/3 with concomitant…DVD and IO overaction

Management:
- Prescribe full…cycloplegic refraction

Why prescribe the full CR?
In case the ET has an accommodative component

Why prescribe the full CR?
In case the ET has an accommodative component
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

With Nystagmus

Congenital ET without nystagmus
-- Family history usually present
-- Deviation tends to be large
-- Cross fixation may be present
-- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral [surgery]

Acquired (onset > age 6 m)

Refractive

Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Consecutive

Cyclic

Deprivation

Acute

Basic

Spasm of the near
Divergence insufficiency
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Congenital ET without nystagmus
-- Family history usually... present
-- Deviation tends to be... large
-- Cross fixation... may be present
-- 2/3 with concomitant... DVD and IO overaction

Management:
-- Prescribe full... cycloplegic refraction
-- Perform bilateral... MR recession

Nystagmus blockage syndrome
Latent nystagmus
Ciancia syndrome

Refraction

Consecutive
Cyclic
Comitant Esotropia

Comitant esotropia

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  - Latent nystagmus
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Acquired (onset > age 6 m)

Congenital ET without nystagmus
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-- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age...

Refraction
- Congenital
- Acquired
  - Refractive
  - Nonrefractive

Nystagmus
- Acute
- Basic
- Consecutive
- Spasm of the near
- Divergence insufficiency
- Cyclic
- Cyanica syndrome
- Latent nystagmus
- Nystagmus blockage syndrome
- Congenital ET without nystagmus -- Family history usually present -- Deviation tends to be large -- Cross fixation may be present -- 2/3 with concomitant DVD and IO overaction

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
-- Best if by age...
Comitant Esotropia

**Comitant esotropia**

**Congenital (onset < age 6 m)**
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

**Acquired (onset > age 6 m)**

**Congenital ET without nystagmus**
- Family history usually present
- Deviation tends to be large
- Cross fixation may be present
- 2/3 with concomitant DVD and IO overaction

**Management:**
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
--Family history usually...present
--Deviation tends to be...large
--Cross fixation...may be present
--2/3 with concomitant...DVD and IO overaction

Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...[surgery]

Deprivation
Acute
Basic
Consecutive
Spasm of the near Divergence insufficiency
Cyclic
Ciancia syndrome
Latent nystagmus
Nystagmus blockage syndrome

Congenital ET without nystagmus
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--Deviation tends to be...large
--Cross fixation...may be present
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Management:
--Prescribe full...cycloplegic refraction
--Perform bilateral...MR recession
--Best if by age...24 months
--If IO overaction present, consider...[surgery]
Comitant Esotropia

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With Nystagmus

Without Nystagmus

Congenital ET without nystagmus
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--Deviation tends to be…large
--Cross fixation…may be present
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Management:
--Prescribe full…cycloplegic refraction
--Perform bilateral…MR recession
--Best if by age…24 months
--If IO overaction present, consider…weakening

With Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Refractive

Nonrefractive

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
- If IO overaction present, consider weakening

What is the realistic goal of treatment?

Monofixation syndrome, or a small-angle esophoria

What about high-grade stereopsis?
It's not gonna happen
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus
- Nystagmus blockage syndrome
- Latent nystagmus
- Ciancia syndrome

Without Nystagmus

Acquired (onset > age 6 m)

What is the realistic goal of treatment?
Monofixation syndrome, or a small-angle esophoria

Management:
-- Prescribe full cycloplegic refraction
-- Perform bilateral MR recession
  -- Best if by age 24 months
-- If IO overaction present, consider weakening

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Comitant Esotropia

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Congenital (onset < age 6 m)
- With Nystagmus
  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

What is the realistic goal of treatment?
Monofixation syndrome, or a small-angle esophoria

What about high-grade stereopsis?

Management:
- Prescribe full...cycloplegic refraction
- Perform bilateral...MR recession
- Best if by age...24 months
- If IO overaction present, consider...weakening
Comitant Esotropia

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Congenital (onset < age 6 m)
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  - Nystagmus blockage syndrome
  - Latent nystagmus
  - Ciancia syndrome
- Without Nystagmus

Acquired (onset > age 6 m)

Management:
- Prescribe full cycloplegic refraction
- Perform bilateral MR recession
- Best if by age 24 months
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Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

Accommodative
- Onset between ages 6 months and 7 years; average age 2.5 years

Nonaccommodative

Deprivation
- Acute
- Basic
- Consecutive
- Spasm of the near
- Divergence insufficiency
- Cyclic
- Ciancia syndrome
- Latent nystagmus
- Nystagmus blockage syndrome
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
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- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative

Accommodative
--Onset between ages 6 months and 7 years; average age 2.5 years
Comitant Esotropia

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Congenital (onset < age 6 m)

- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative
  - Onset between ages 6 months and 7 years; average age 2.5 years
  - Initially, intermittently, eventually becoming constant
- Nonaccommodative

Nystagmus blockage syndrome

Cyanita syndrome

Accommodative--Onset between ages 6 months and 7 years; average age 2.5 years--Initially, intermittently, eventually becoming constant

Deprivation

Basic

Cyclic

Spasm of the near Divergence insufficiency
Comitant Esotropia

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Congenital (onset < age 6 m)
  - With Nystagmus
  - Without Nystagmus

Acquired (onset > age 6 m)
  - Accommodative
  - Nonaccommodative

**Accommodative**
--Onset between ages 6 months and 7 years; average age 2.5 years
--Initially...intermittent, eventually becoming...constant
Comitant Esotropia

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Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative

**Accommodative**
- Onset between ages 6 months and 7 years; average age 2.5 years
- Initially...intermittent, eventually becoming...constant
- Amblyopia is...[common vs uncommon]
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Accommodative
--Onset between ages 6 months and 7 years; average age 2.5 years
--Initially…intermittent, eventually becoming…constant
--Amblyopia is…common
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative

Accommodative
--Onset between ages 6 months and 7 years; average age 2.5 years
--Initially intermittent, eventually becoming constant
--Amblyopia is common
--C/o diplopia early, but stop after developing a…
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)

- Accommodative
  - Onset between ages 6 months and 7 years; average age 2.5 years
  - Initially...intermittent, eventually becoming...constant
  - Amblyopia is...common
  - c/o diplopia early, but stop after developing a...facultative suppression scotoma

- Nonaccommodative
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma

What is ‘suppression’ in this context?

It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?

It is one of three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially ... intermittent, eventually
--Amblyopia is ... common
--c/o diplopia early, but stop after developing a ... facultative suppression

What is 'suppression' in this context?
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?

Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma

Cyclic

Deprivation

Acute

Basic

Consecutive

Spasm of the near Divergence insufficiency

Ciancia syndrome

Latent nystagmus

Nystagmus blockage syndrome

What is ‘suppression’ in this context?
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?
It is one of three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia
Comitant Esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nystagmus Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventual
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

What is ‘suppression’ in this context? It is the prevention of an image in one eye from reaching conscious awareness.

What does it mean to say a suppression scotoma is ‘facultative’? Facultative suppression

Cyclic

Deprivation Acute Basic Consecutive Spasm of the near Divergence insufficiency Cyclic Ciancia syndrome Latent nystagmus Accommodative

Onset between ages 6 months and 7 years; average age 2.5 years
--Initially...intermittent, eventual
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

What is ‘suppression’ in this context? It is the prevention of an image in one eye from reaching conscious awareness.

What does it mean to say a suppression scotoma is ‘facultative’? Facultative suppression
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

What is 'suppression' in this context?
It is the prevention of an image in one eye from reaching conscious awareness

What does it mean to say a suppression scotoma is 'facultative’?
It means suppression occurs only while the eye is deviated

facultative suppression
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...facultative suppression scotoma

With Nystagmus

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Deprivation
Acute
Basic
Consecutive
Spasm of the near
Divergence insufficiency
Cyclic
Ciancia syndrome
Latent nystagmus
Nystagmus blockage syndrome

What are the other two sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia?
--Suppression
--?
--?

Mnemonic is…

How does the phenomenon of suppression come about?
It is one of the three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia

three sensory adaptations
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Accommodative
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

Nonaccommodative

Refractive
--Onset between ages 6 months
--Initially...intermittent, eventually
--Amblyopia is...common
--c/o diplopia early, but stop after developing a...

What are the other two sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia?

Suppression
--A
--M

Mnemonic is...SAM

How does the phenomenon of suppression come about?
It is one of the three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia

three sensory adaptations

facultative suppression scotoma
Cyclic

What is 'suppression' in this context?
It is the prevention of an image in one eye from reaching conscious awareness

How does the phenomenon of suppression come about?
It is one of the three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia

three sensory adaptations
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Accommodative

--- Onset between ages 6 months
--- Initially...intermittent, eventually
--- Amblyopia is...common
--- c/o diplopia early, but stop after developing a...facultative suppression scotoma

With Nystagmus

--- Basic
--- Consecutive
--- Spasm of the near divergent insufficiency
--- Cyclic
--- Ciancia syndrome
--- Latent nystagmus
--- Nystagmus blockage syndrome

What are the other two sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia?

--- Suppression
--- Anomalous retinal correspondence (ARC)
--- Monofixation syndrome

How does the phenomenon of suppression come about?

It is one of the three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia.
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus

Without Nystagmus

Accommodative

Nonaccommodative

Refractive Nonrefractive

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

What are the other two sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia?

-- Suppression

-- Anomalous retinal correspondence (ARC)

-- Monofixation syndrome

For more on suppression, ARC and monofixation syndrome, see slide-set P14

How does the phenomenon of suppression come about?

It is one of three sensory adaptations the visual system employs to avoid the occurrence of visual confusion and/or diplopia.

Facultative suppression scotoma

Cyclic
Comitant Esotropia

Comitant esotropia

Accommodative: Refractive
--Combo of uncorrected and inadequate

Latent nystagmus
Ciancia syndrome

RefRACTive

Accommodative
Nonaccommodative

Acquired (onset > age 6 m)

--- Basic
--- Acute
--- Deprivation
--- Divergence insufficiency
--- Spasm of the near
--- Consecutive
--- Cyclic

Management
-- Prescribe full CR
-- If residual ET' with full CR: Rx bifocal
-- Try to wean off plus over time
Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

Accommodative: Refractive
--Combo of uncorrected hyperopia and inadequate divergence

Latent nystagmus
Ciancia syndrome

Accommodative

Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Refractive

Nonrefractive

Management
--Prescribe full CR
--If residual ET' with full CR: Rx bifocal --Try to wean off plus over time
Comitant Esotropia

**Comitant esotropia**

**Acquired (onset > age 6 m)**

- **Accommodative**
  - Latent nystagmus
  - Ciancia syndrome

- **Refractive**
  - Combo of uncorrected hyperopia and inadequate divergence
  - Average refractive error: +4
  - Strabismus usually measures ET ≈ ET'

**Management**
- Prescribe full CR
- If residual ET' with full CR: Rx bifocal
- Try to wean off plus over time

**Nonaccommodative**
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Accommodative: Refractive
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Basic
Acute
Deprivation
Divergence insufficiency
Spasm of the near
Consecutive
Cyclic
Comitant Esotropia

Comitant esotropia

Accommodative: **Refractive**
- Combo of uncorrected hyperopia and inadequate divergence
- Average refractive error: +4
- Strabismus usually measures ET = ET'

Management
- Prescribe full CR
- If residual ET' with full CR: Rx bifocal
- Try to wean off plus over time

Latent nystagmus
Ciancia syndrome

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Refractive

Nonrefractive
Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

Accommodative: Refractive
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4
--Strabismus usually measures ET ≈ ET’

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Latent nystagmus
Cincia syndrome

Basic
Acute
Deprivation
Divergence insufficiency
Spasm of the near
Consecutive
Cyclic
Comitant Esotropia

Comitant esotropia

Acquired (onset > age 6 m)

Accommodative

Refractive
- Combo of uncorrected hyperopia and inadequate divergence
- Average refractive error: +4
- Strabismus usually measures ET \( \approx \) ET'

Management
- Prescribe…[refraction]

Nonaccommodative

Refractive

Nonrefractive
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Accommodative

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Accommodative: Refractive
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4
--Strabismus usually measures ET ≈ ET'

Management
--Prescribe…full CR

Latent nystagmus
Ciancia syndrome

Accommodative

Nonaccommodative

---Basic
---Acute
---Deprivation
---Divergence insufficiency
---Spasm of the near
---Consecutive
---Cyclic

Acquired (onset > age 6 m)

Refractive

Nonrefractive
Comitant Esotropia

Comitant esotropia

Accommodative: *Refractive*
--- Combo of uncorrected *hyperopia* and inadequate *divergence*
--- Average refractive error: +4
--- Strabismus usually measures ET ≈ ET’

**Management**
--- Prescribe… *full CR*
--- If residual ET’ with full CR: Rx…

**Refractive**

Latent nystagmus
Ciancia syndrome

Nonrefractive

--- Basic
--- Acute
--- Deprivation
--- Divergence insufficiency
--- Spasm of the near
--- Consecutive
--- Cyclic

**Acquired** (onset > age 6 m)

--- Accommodative
--- Nonaccommodative

--- Deprivation
--- Basic
--- Acute
--- Cyclic
--- Spasm of the near
--- Divergence insufficiency
--- Latent nystagmus
--- Ciancia syndrome
Comitant Esotropia

Comitant esotropia

Accommodative: Refractive
--Combo of uncorrected hyperopia and inadequate divergence
--Average refractive error: +4
--Strabismus usually measures ET ≈ ET’

Management
--Prescribe…full CR
--If residual ET’ with full CR: Rx…bifocal

Accommodative

Nonaccommodative

Refractive

Nonrefractive

Acquired (onset > age 6 m)

Latent nystagmus
Ciancia syndrome

Basic
Acute
Deprivation
Divergence insufficiency
Spasm of the near
Consecutive
Cyclic
Comitant Esotropia

**Comitant Esotropia**

Accommodative: **Refractive**
- Combo of uncorrected hyperopia and inadequate divergence
- Average refractive error: +4
- Strabismus usually measures ET ≈ ET’

**Management**
- Prescribe...full CR
  - If residual ET’ with full CR: Rx...bifocal
  - Try to wean off plus over time

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Refractive

Nonrefractive

Latent nystagmus
Ciancia syndrome
Comitant Esotropia

Management

- Prescribe...full CR
- If residual ET' with full CR: Rx...bifocal
- Try to wean off plus over time

Compliance is often an issue with spectacle wear in this population—why?

Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can't relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will 'cut sphere,' ie, prescribe less than the full CR. Alternatively and perhaps more frequently, the clinician will prescribe topical atropine to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.
Comitant Esotropia

Compliance is often an issue with spectacle wear in this population—why? Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can’t relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will ‘cut sphere;’ ie, prescribe less than the full CR.

Management
--Prescribe…full CR
--If residual ET’ with full CR: Rx…bifocal
--Try to wean off plus over time

Latent nystagmus
Ciancia syndrome

Accommodative
Nonaccommodative

Refractive
Nonrefractive

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

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Management
--Prescribe…full CR
--If residual ET’ with full CR: Rx…bifocal
--Try to wean off plus over time

Comitant esotropia

Management
--Prescribe…full CR
--If residual ET’ with full CR: Rx…bifocal
--Try to wean off plus over time

Refractive

Nonrefractive

Comitant

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Compliance is often an issue with spectacle wear in this population—why? Patients who have become accustomed to maintaining a constant accommodative effort are often intolerant of full-CR spectacles (they can’t relax accommodation enough to see clearly through them), and will refuse to wear them—hence the compliance issue. To improve compliance, some clinicians will ‘cut sphere;’ ie, prescribe less than the full CR. Alternatively and perhaps more frequently, the clinician will prescribe topical atropine to paralyze accommodation, thereby making the child more accepting of the full-CR spectacles.

Management
--Prescribe...full CR
--If residual ET’ with full CR: Rx...bifocal
--Try to wean off plus over time

Latent nystagmus
Ciancia syndrome

Accommodative
Refractive
Nonaccommodative
Nonrefractive

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Accommodative: Nonrefractive
-- ET secondary to...

Acquired (onset > age 6 m)

Accommodative
Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Nonrefractive

Management
-- No consensus on optimum treatment
-- Give bifocal of about...
-- Reasonable treatment goals:
  - Distance: Fusion
  - Near: <10°
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio

Accommodative

Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

What is the AC/A ratio?

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio

Accommodative

Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Accommodative:
Nonrefractive

--ET secondary to high AC/A ratio
Comitant Esotropia

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.
Comitant Esotropia

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)
Comitant Esotropia

What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

What are the units for:
--AC?
--A?

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio

Accommodative

Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

What are the units for:
- AC? Prism diopters
- A? Diopters

Accommodative: Nonrefractive
-- ET secondary to high AC/A ratio

Accommodative

Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

**What is the AC/A ratio?**
The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

**What are the units for:**
--AC? **Prism diopters**  
--A? **Diopters**

**What is a normal AC/A?**

--ET secondary to high AC/A ratio

Accommodative: **Nonrefractive**

-ET' > ET
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
--Distance: Fusion
--Near: <10°

---

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
What is the AC/A ratio?
The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the **AC/A ratio**. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)

**What are the units for:**

--AC? **Prism diopters**

--A? **Diopters**

**What is a normal AC/A?**

Around 3:1 to 5:1

---

**Accommodative:**

--- **Nonrefractive**

-- ET secondary to high AC/A ratio
**Comitant Esotropia**

What is the AC/A ratio?

**How is the AC/A ratio measured?**

- **AC? Prism diopters**
- **A? Diopters**

What is a normal AC/A? **Around 3:1 to 5:1**

Accommodative: **Nonrefractive**
- ET secondary to high AC/A ratio

Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

---

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Comitant Esotropia

What is the AC/A ratio?

How is the AC/A ratio measured?
The gradient method is probably the most commonly-employed technique in clinical practice. The child’s deviation is measured while gazing at a near (33 cm) target. The child is then re-measured while wearing a +3D add, the addition of which should obviate any accommodative effort on the child’s part to see a target at 33 cm. The change in ET is divided by 3 (the power of the add); the result is the child’s AC/A ratio.

\[
\text{AC/A ratio} = \frac{\text{ET’ without add} - \text{ET’ with add}}{3}
\]

If the result is greater than 5, the child has a high AC/A ratio.

What are the units for:
--AC? Prism diopters
--A? Diopters

What is a normal AC/A?
Around 3:1 to 5:1
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to... high AC/A ratio
-- ET \( \leq \) ET'

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Accommodative

Nonrefractive

Management
-- No consensus on optimum treatment-- Give bifocal of about... +3-- Reasonable treatment goals:
-- Distance: Fusion
-- Near: \(< 10 \Delta ET\)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to…high AC/A ratio
--ET < ET'

Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
What is the AC/A ratio?
The near triad consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio. For some individuals, the ‘factory setting’ of the AC/A ratio is too high—their eyes converge so much when they accommodate that their fusional and divergence mechanisms are overwhelmed, and an ET results. (Because near vision elicits more accommodation than distance vision, the ET is greatest at near.)
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Congenital (onset < age 6 m) Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to high AC/A ratio
-- ET < ET'

How much greater is the ET at near?

Accommodative Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Congenital (onset < age 6 m)

- Accommodative: Nonrefractive
  - ET secondary to high AC/A ratio
  - ET < ET’

- How much greater is the ET at near? At least 10Δ

Acquired (onset > age 6 m)

- Accommodative
- Nonaccommodative
  - Basic
  - Acute
  - Deprivation
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive
  - Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'
--Average refractive error #, but can be anything, even myopic

Accommodative

Nonrefractive

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Accommodative

Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

- Accommodative: Nonrefractive
  -- ET secondary to... high AC/A ratio
  -- ET < ET'
  -- Average refractive error +2, but can be anything, even myopic

Management
-- No consensus on optimum treatment
-- Give bifocal of about...#

Acquired (onset > age 6 m)

- Accommodative
- Nonaccommodative
  - Basic
  - Acute
  - Deprivation
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive
  - Cyclic

Accommodative: Nonrefractive
-- ET secondary to... high AC/A ratio
-- ET < ET'
-- Average refractive error +2, but can be anything, even myopic

Management
-- No consensus on optimum treatment
-- Give bifocal of about...#
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...high AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic
Management
--No consensus on optimum treatment
--Give bifocal of about...+3

Accommodative

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Consecutive
- Cyclic

Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET’
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about +3
--Reasonable treatment goals:
   --Distance:
   --Near:

Accommodative  Nonrefractive

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to... high AC/A ratio
-- ET < ET'
-- Average refractive error +2, but can be anything, even myopic

Management
-- No consensus on optimum treatment
-- Give bifocal of about... +3
-- Reasonable treatment goals:
  -- Distance: Fusion
  -- Near: <10Δ ET

Accommodative

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Consecutive
- Cyclic
Comitant Esotropia

- Comitant esotropia
  - Congenital (onset < age 6 m)
  - Acquired (onset > age 6 m)

**Accommodative:** Nonrefractive
- ET secondary to high AC/A ratio
- ET < ET'
- Average refractive error +2, but can be anything, even myopic

**Management**
- No consensus on optimum treatment
- Give bifocal of about...+3
- Reasonable treatment goals:
  - Distance: Fusion
  - Near: <10° ET

**Nonrefractive**
- ET < ET

*Can a high AC/A ratio be a component of an exotropia?*

- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to high AC/A ratio
--ET < ET'
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Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Can a high AC/A ratio be a component of an exotropia?
Yes

Nonrefractive

Acute
-Deprivation
-Divergence insufficiency
-Spasmod of the near
-Consecutive
-Cyclic
Can a high AC/A ratio be a component of an exotropia? Yes
Is high AC/A ratio more likely to be associated with ET, or with XT?

Comitant esotropia

Congenital (onset < age 6 m)
Acquired (onset > age 6 m)

Accommodative: Nonrefractive
-- ET secondary to high AC/A ratio
-- Average refractive error +2, but can be anything, even myopic
Management
-- No consensus on optimum treatment
-- Give bifocal of about...+3
-- Reasonable treatment goals:
  -- Distance: Fusion
  -- Near: <10Δ ET

Refractive

High AC/A ratio

Nonrefractive

- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

**Comitant esotropia**

- **Congenital** (onset < age 6 m)
- **Acquired** (onset > age 6 m)

**Accommodative** (Nonrefractive)**:
- ET secondary to high AC/A ratio
- ET < ET'
- Average refractive error +2, but can be anything, even myopic

**Management**
- No consensus on optimum treatment
- Give bifocal of about...+3
- Reasonable treatment goals:
  - Distance: Fusion
  - Near: <10Δ ET

**Can a high AC/A ratio be a component of an exotropia? Yes**

**Is high AC/A ratio more likely to be associated with ET, or with XT?**
- ET (by a lot)

**Nonrefractive**
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--- ET secondary to… low AC/A ratio
--- ET < ET’
--- Average refractive error +2, but can be anything, even myopic

Management
--- No consensus on optimum treatment
--- Give bifocal of about… +3
--- Reasonable treatment goals:
   --- Distance: Fusion
   --- Near: <10△ ET

Nonrefractive
--- RT
--- Divergence insufficiency
--- Spasm of the near
--- Consecutive
--- Cyclic

Is low AC/A ratio a thing?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to...low AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Is low AC/A ratio a thing?
Yes

- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Nonrefractive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Accommodative: Nonrefractive
--ET secondary to low AC/A ratio
--ET < ET'
--Average refractive error +2, but can be anything, even myopic

Management
--No consensus on optimum treatment
--Give bifocal of about...+3
--Reasonable treatment goals:
  --Distance: Fusion
  --Near: <10Δ ET

Nonrefractive

Is low AC/A ratio a thing?
Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?

Acute
-Deprivation
-Divergence insufficiency
-Spasmod of the near
-Consecutive
-Cyclic
Comitant Esotropia

- Congenital (onset < age 6 m)
- Acquired (onset > age 6 m)

Accommodative: Nonrefractive
- ET secondary to \textit{low AC/A ratio}
- ET \textless ET'
- Average refractive error +2, but can be anything, even \textit{myopic}

Management
- No consensus on optimum treatment
- Give bifocal of about \ldots +3
- Reasonable treatment goals:
  - Distance: Fusion
  - Near: \textit{\textless 10\Delta ET}

Is low AC/A ratio a thing?
Yes

Is low AC/A ratio more likely to be associated with ET, or with XT?
XT (by a lot)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus
  - Nystagmus blockage syndrome
  - Late Latent Nystagmus
  - Ciancia syndrome

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
    - In essence, is the acquired version of...
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

With Nystagmus

Without Nystagmus

Acquired (onset > age 6 m)

Accommodative

Nonaccommodative

Nonaccommodative: Basic

--In essence, is the acquired version of… ‘congenital ET w/o nystagmus’

---Consider workup for a CNS lesion

Management

--CR for any accommodative component--Consider prism adaptation prior to bilateral medial rectus recession
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
    - In essence, is the acquired version of... 'congenital ET w/o nystagmus'
    - Consider workup for a...
  - Acute
  - Ciancia syndrome
  - Latent nystagmus
  - Nystagmus blockage syndrome
  - Spasm of the near insufficiency
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative: Basic
  - In essence, is the acquired version of ‘congenital ET w/o nystagmus’
  - Consider workup for a…CNS lesion
- Nonaccommodative: Consecutive
- Nonaccommodative: Spasm of the near
- Nonaccommodative: Ciancia syndrome
- Nonaccommodative: Latent nystagmus
- Nonaccommodative: Nystagmus blockage syndrome

Deprivation
- Acute
- Basic
- Consecutive
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Nonaccommodative: Basic
--In essence, is the acquired version of...‘congenital ET w/o nystagmus’
--Consider workup for a...CNS lesion

Management
--CR for any accommodative component
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Nonaccommodative: Basic
--In essence, is the acquired version of…‘congenital ET w/o nystagmus’
--Consider workup for a…CNS lesion

Management
--CR for any accommodative component
--Consider two words (non-surg proc.) prior to four words (surgical procedure)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Accommodative  Nonaccommodative

Nonaccommodative: Basic
--In essence, is the acquired version of ‘congenital ET w/o nystagmus’
--Consider workup for a…CNS lesion

Management
--CR for any accommodative component
--Consider prism adaptation prior to bilateral medial rectus recession
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic
  - Ciancia syndrome
  - Latent nystagmus
  - Nystagmus blockage syndrome

---

**What is prism adaptation?**

---

**prism adaptation**

---

--Consider prism adaptation prior to bilateral medial rectus recession
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With Nystagmus
- Without Nystagmus

Acquired (onset > age 6 m)
- Accommodative
- Nonaccommodative
  - Basic

What is prism adaptation?
It is a process in which the pt is prescribed the full prism needed to nullify their ET, then re-evaluated periodically to determine whether additional ET has been ‘uncovered.’ If it has, their prescription is updated to nullify the additional ET. This is repeated until the prism prescription is stable, at which time surgery is performed to correct the full final prism prescription.

prism adaptation

--Consider prism adaptation prior to bilateral medial rectus recession
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)
- With
- Without

Acquired (onset > age 6 m)
- With
- Without

Nonaccommodative: Other types
- Acute: Will have diplopia. Need neuro workup

Nonaccommodative
- Basic
- Acute
  - Deprivation
  - Divergence insufficiency
  - Spasm of the near
  - Consecutive
  - Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
---Acute: Will have diplopia. Need neuro workup

How does acute acquired ET differ from a plain ol’ CN6 palsy?

Nonaccommodative
---Basic
---Acute
---Deprivation
---Divergence insufficiency
---Spasm of the near
---Consecutive
---Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup

How does acute acquired ET differ from a plain ol' CN6 palsy?
The acute acquired ET is comitant; CN6 palsy is incomitant

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With

Without

Nonaccommodative: Other types

--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?
In young children, deprivation produces XT and ET in approximately equal proportions. However, in older children and adults, deprivation strabismus is usually an

Nonaccommodative
--Basic
--Acute
--Deprivation
--Spasm of the near
--Consecutive
--Cyclic

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Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types

--**Acute**: Will have diplopia. Need neuro workup

--**Deprivation**: Secondary to cataracts, corneal scars, amblyopia

How does deprivation strabismus differ in children vs adults?

In young children, deprivation produces XT and ET in approximately equal proportions. However, in older children and adults, deprivation strabismus is usually an XT.
Comitant Esotropia

Nonaccommodative: Other types

--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia
--Divergence insufficiency: ET>ET’. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With        Without

Nonaccommodative

--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

Note that these conditions can be differentiated on the basis of the relative magnitude of the esotropia as a function of whether it is measured at distance vs near:

**Refractive:** $ET > ET'$

**Nonrefractive (high AC/A ratio):** $ET \leq ET'$

**Divergence insufficiency:** $ET = ET'$

---

Deprivation
- Spasm of the near
- Consecutive
- Cyclic

Latent nystagmus
- Ciancia syndrome

Refractive  Nonrefractive
Comitant Esotropia

Note that these conditions can be differentiated on the basis of the relative magnitude of the esotropia as a function of whether it is measured at distance vs near:

Refractive: \( ET \approx ET' \)

Nonrefractive (high AC/A ratio): \( ET < ET' \)

Divergence insufficiency: \( ET > ET' \)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia
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--Spasm of the near: Will demonstrate near triad

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

What is the near triad?

- Convergence
- Accommodation
- Miosis

---Spasm of the near: Will demonstrate near triad

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

---Deprivation: Secondary to cataracts, corneal scars, amblyopia
---Divergence insufficiency: ET > ET'. 2 forms: benign (idiopathic, transient) and 2o to trauma or pontine lesion
---Spasm of the near: Will demonstrate near triad
---Consecutive: Fancy term for XT surgery overcorrection
---Cyclic: Initially qod, then constant

Who is the classic spasm-of-the-near patient?

A teenaged female

What clinical maneuver can help make this diagnosis?

Have the patient perform monocular abductions (will be full OU)
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)

Acquired (onset > age 6 m)

What is the near triad?
Convergence + accommodation + miosis

Nonaccommodative
- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic

Spasm of the near: Will demonstrate near triad
Comitant Esotropia

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Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency

Spasm of the near

- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

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- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
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Comitant Esotropia

Comitant esotropia

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Nonaccommodative

--Basic
--Acute
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--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

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Acquired (onset > age 6 m)

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- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
- Consecutive
- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With Nystagmus  Without Nystagmus

Nonaccommodative: Other types

- **Acute**: Will have diplopia. Need neuro workup
- **Deprivation**: Secondary to cataracts, corneal scars, amblyopia
- **Divergence insufficiency**: ET>ET'. 2 forms: benign (idiopathic, transient) and 2o to trauma or pontine lesion
- **Spasm of the near**: Will demonstrate near triad
- **Consecutive**: Fancy term for XT surgery overcorrection

Nonaccommodative

- Basic
- Acute
- Deprivation
- Divergence insufficiency
- Spasm of the near
  - Consecutive
  - Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia
--Divergence insufficiency: ET > ET'. 2 forms: benign (idiopathic, transient) and due to trauma or pontine lesion
--Spasm of the near
--Consecutive: Fancy term for XT surgery overcorrection

Is consecutive ET an indication for immediate re-op?

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With
Nonaccommodative

Without
Nonaccommodative

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia
--Divergence insufficiency: ET > ET'. 2 forms: benign (idiopathic, transient) and 2o to trauma or pontine lesion
--Spasm of the near
--Consecutive: Fancy term for XT surgery overcorrection

Is consecutive ET an indication for immediate re-op?
No--wait several months at least, unless the ET is very large and/or symptomatic

Nonaccommodative:
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m) Acquired (onset > age 6 m)

With Nonaccommodative: Other types

Without

Nonaccommodative: Other types

--- Acute: Will have diplopia. Need neuro workup
--- Deprivation: Secondary to cataracts, corneal scars, amblyopia
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--- Basic
--- Acute
--- Deprivation
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--- Consecutive
--- Cyclic
Comitant Esotropia

Comitant esotropia

Congenital (onset < age 6 m)  Acquired (onset > age 6 m)

With  Without

Nonaccommodative: Other types
--Acute: Will have diplopia. Need neuro workup
--Deprivation: Secondary to cataracts, corneal scars, amblyopia
--Divergence insufficiency: ET>ET'. 2 forms: benign (idiopathic, transient) and 2° to trauma or pontine lesion
--Spasm of the near: Will demonstrate near triad
--Consecutive: Fancy term for XT surgery overcorrection
--Cyclic: Initially every other day; progresses to constant

Nonaccommodative
--Basic
--Acute
--Deprivation
--Divergence insufficiency
--Spasm of the near
--Consecutive
--Cyclic