

Unusual Acute Acquired Comitant Esotropia

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Acute Acquired Comitant Esotropia (AACE)

- Dramatic onset of a relatively large angle esotropia with diplopia and minimal refractive error.
- The prevalence of acute esotropia is not known, but is considered rare.
- It has been classified into three forms.



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Types

(1) Swan type. after interruption of binocular vision (monocular occlusion, loss of vision in one eye)

(2) Franceschetti type. as a result of a decompensated esophoria.(large angle, low hyperopia, no or minimal accommodative element)

(3) Bielschowsky type. in patients with uncorrected myopia (more than -5 D) following physical or psychic shock or exhaustion (diplopia for distance but fusion for near vision)

(4) That caused by an intracranial pathologic process.

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Sometimes it's different...

- Acute esotropia can occur in 30 % of people with OPIOID withdrawal.
- Can result in temporary significant disability due to the double vision.
- Usually resolve in 6-10 weeks.



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- Phenomenon was first observed in soldiers returning from Vietnam.
- Opioid withdrawal signs and symptoms typically start within 6 to 10 hours after the last dose and peak within 2 to 4 days.
- Vision problems including diplopia, blurred vision loss of stereopsis were reported with many drugs of abuse.
- Many hypotheses were proposed.
- The currently widely accepted one is the 'Disuse Atrophy' of the motor fusion system.



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Pathogenesis

The three main things that play a role in the pathology of esotropia in these patients are: **pupillary constriction, accommodation, and vergence** while on drugs.

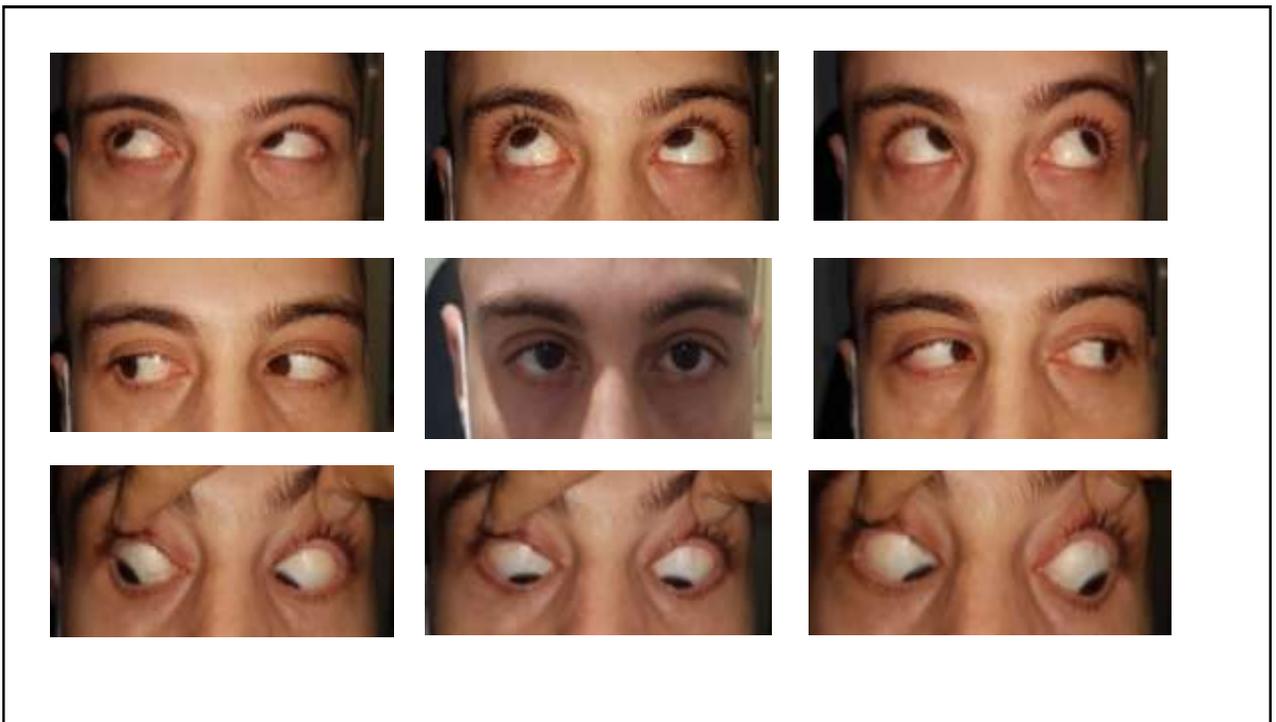
With opioid withdrawal there is a sudden parasympatholytic state with pupillary dilation and paralysis of the ciliary muscle resulting in decompensation of fusion leading to esotropia.

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Case Report

- 22 yr old male.
- H/O of opioid use for the past 2 yrs, but stopped abruptly and is on withdrawal therapy.
- C/O of recent onset of diplopia and esotropia since 10 days.
- VA 6/6 OU.
- Free Ocular Motility.
- Alternating Esotropia 35 PD.

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- There was no evidence of proptosis, convergence spasm, or divergence insufficiency.
- There was no evidence of a 3, 4, 6 th nerve palsy.
- Cycloplegic refraction: +2.00/+0.50 ×80 OD, +2.25 /+1.00 ×95 OS.
- Cycloplegia had no effect on the degree of tropia.
- Slit lamp examination was unremarkable.
- Fundus : no papilledema with symmetric CD 0.3.

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- FU after 2 weeks of onset, esotropia was stable at 35 PD.
- Hyperopic glasses were prescribed but did not affect esotropia.
- Fresnel Prisms were offered but patient refused.
- FU at 6 weeks esotropia improved to 25 PD. But patient was not happy and very irritable.
- He missed all other FUs.

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At 2 weeks



At 6 weeks

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Literature

- Firth et al. suggested that opioid receptors in retinal ganglion cells or in the midbrain may be responsible for development of esotropia.
- Furthermore, they propose that there may be disequilibrium between convergence and divergence on withdrawal of opioids.
- It is well known that opioids cause activation of the pupillary sphincter and that withdrawal causes mydriasis.

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Literature

- Kowal et al. proposed the mechanism of *reversible disuse atrophy* of the motor fusion system.
- They state that opioid-induced miosis produces a pinhole effect resulting in a less than normal requirement for accommodation, accommodative convergence, and motor fusion.
- Opioid withdrawal, especially with naltrexone, causes mydriasis with blur and a rapid need for accommodation, convergence, and fusion, which are unavailable due to *reversible disuse atrophy* of the motor fusion system, thus resulting in comitant esotropia

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Literature

- Kowal et al. suggested that a hyperopic cycloplegic refraction is a risk factor.
- This suggests that accommodation and accommodative convergence may be involved.
- Rapid withdrawal using naltrexone has a greater incidence of strabismus compared to withdrawal using methadone.
- They suggested that physical and psychological shock could weaken the motor fusion system.



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What to offer ?

- Trial of correction of existing hyperopia.
- Pilocarpine 1% drops.
- Prismatic correction using prismatic glasses or Fresnel prisms.
- Botox injection into the medial rectus.
- Persistence for over 6 months warrants surgical intervention.

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This condition does usually not warrant any intervention apart from symptomatic management of diplopia and continued abstinence from opioids.

Unfortunately many return to drug abuse due to diplopia intolerance.

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