Cell Phone Induced Acquired Esotropia

Tyler's Story

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Acute Acquired Comitant Esotropia related to excessive smartphone use

- Hyo Seok Lee, Sang Woo Park, and Hwan Heo
- BMC Ophthalmol, 2016; 16:37. Published online 2016, Apr 9.
- Retrospective study: Medical records of 12 adolescent patients with AACE and a history of excessive smartphone use were reviewed.
- Duration of smartphone use, angle of deviation, refractive error, stereopsis and treatment options were analyzed.
- Every one of these patients used a smartphone for 4 or more hours per day over several months.

- All patients showed convergent and comitant esotropia ranging from 15 to 45 prism diopters at far fixation. The angle of deviation was nearly the same for far and near fixation.
- Myopia was seen in 8 patients (-3.84+/-1.68)
- The other 4 patients showed mild hyperopia ((+0.84+/-0.53)
- Reductions in esodeviation were found in all patients after refraining from smartphone use.
- Bilateral medial rectus resection was done on 3 patients with considerable remnant esodeviation.
- Postoperative exams showed orthophoria with good stereoacuity.

- Their conclusion stated, “Excessive smartphone use might influence AACE development in adolescents. Refraining from smartphone use can decrease the degree of esodeviation in these patients, and remnant deviation can be successfully managed with surgical correction.”
- AACE is an unusual presentation of esotropia in older children and adults. It is generally considered rare.
- “Smartphone possession has become increasingly popular among adolescents and adults. In a relatively short period of time, smart mobile technology has significantly penetrated society in the Western world and globally.”
- Smartphone Addiction has “rapidly become a significant mental health problem…It is a major contributor to excessive near work.”

Tyler's Story

- His first exam was **July 5, 2012**, at 7 years old
- Hx: Mild Ptosis OS and Congenital Anisocoria since birth (OD 5mm, OS 4mm.) Horner's Syndrome was Ruled out. He was a "large baby" with normal developmental milestones. He had difficulty to sit still in class and reversed letters "b" and "d."
- Phorias: 4 esophoria at distance and near sc
- Ocular health appeared normal.
- NRA/PRA balance was +1.25 OD and OS
- Refraction + 1.25 OU, +1.25 was prescribed for full time use indoors
- Progress exam at **10/3/2012**: He reported less fatigue, ability to focus well in class.
- Phorias: 1/2 eso at distance, 4 exo at near

- Exam **June 21,2017** at 12 years old. He had started high school
- Activities: read, computer, swim, hockey
- He had stopped wearing the Rx because they “bothered” him (outgrown?)
- Stereo: 9/9 Wirt circles
- Phorias: Distance 5 eso, Near 14 eso
- PRA: plano/+0.75 NRA: +4.50/+2.25
- Refraction was plano OU, but he felt better with +1.00 OU. +1.00 Rxed OU
- Follow-up **November 8, 2017**
- He stated he had no more headaches since getting the new glasses
- Phorias: Distance 4 eso, Near 11 eso
- PRA: plano/+1.00 NRA +4.50/+2.75

- Exam **September 11, 2019**, age 14, with another OD in the practice
- He had lost his glasses 6 months previously and said he saw clearly without his glasses
- The file is only marked “eso” for distance and near
- Rx was given **+1.00 OU** again
- Emergency Appointment **August 18, 2020**, age 15, with another OD in the practice
- He had acquired a left esotropia and was seeing double for 6 days.
- The OD diagnosed Acute Acquired Left Esotropia and sent him to the emergency room at the Montreal Children’s Hospital
- Mom called me and I suggested she mention the possibility that the ET could be caused by cell phone overuse.
- Mom said they laughed at her when she mentioned I said it could be cell phone-induced Esotropia

- Exam with me August 25, 2020, 6 days after his hospital exam, for my opinion
- He was seen in neurology, ophthalmology, neuro-ophthalmology and orthoptics. Blood tests were done including thyroid and ruling out Anti-Acetylcholine Receptor Antibodies. Waiting for an mri.
- Hospital Rx: plano OU with about 40^ Base Out OS in a Fresnel prism
- I asked about cell phone use. He said about 6 hours per day, at 8 to10 inches.
- I had him start eye stretches to the side OS, OD, OS, monocularly.
- Started Brock String “V” work. Start with V close and slowly try to keep the V while moving backwards.
- Recommended cutting back cell phone use and holding phone at 16 inches.
- Recommended using nasal occlusion OS at home
- I asked for a phone call after mri
- All tests were negative

- Appointment **December 14, 2020,** Follow-up and Vision Therapy
- He wore the prism glasses for 2 months and went without them for 1 month.
- He started using bigger screens and pushing them farther away.
- Since everything medical was ruled out, **the hospital agreed the ET was most likely due to cell phone use.**
- He had been doing OS nasal occlusion with frosted tape at home.
- Vision Therapy: Deep Breathing, Jumping Jacks, Monocular Thumb Rotations, Brock 'V' String, Fixations in 9 positions of gaze while getting closer to the target. All of these were to be done at home daily.

- Tyler got a hockey scholarship to go to high school in Rhode Island for grades 10 and 11
- He said he did not have double vision on the ice (the arena is huge)
- When fatigued, he would get diplopia, but was able to straighten the eye.
- Exam **November 22, 2021,** age 16
- He had gotten a 13” inch laptop monitor and was spending extensive time on computers.
- Stereo 2/9 Wirt circles
- Distance Phoria 8 eso Near Phoria 3 eso
- To continue Rx +1.00 for class, screens, and near.
- Exam **June 26, 2023,** age 17
- Still using +1.00 OU, doing Brock String “V” for divergence
- Plan to do grade 12 online and go into the Juniors for hockey.
- With extreme fatigue he gets esotropia but can straighten at will.

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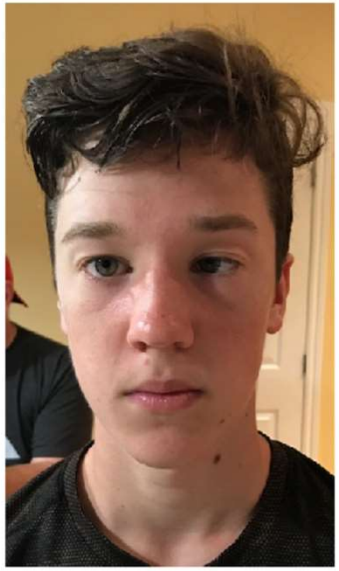

August 18, 2020

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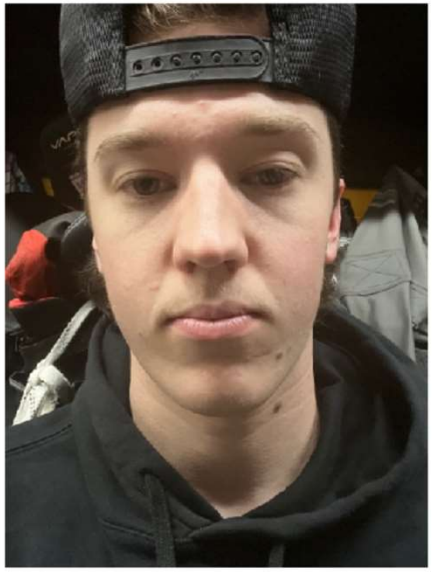

December 5, 2023

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How can we get the makers of screen devices to make recommendations concerning work distance and amount of time spent on these devices?

Thank you!

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