

lina Health


Concussion Cases Presentations

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CONCUSSION CASE

- 14 yo female soccer goalkeeper
- DOI 5/28/19
- 1st visit to Allina Health Concussion Clinic on 6/3/19




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CONCUSSION CASE

HISTORY:

- Goalkeeper was hit in the forehead with kicked ball from close range
- Fell back into the net; no LOC
- No retrograde or anterograde amnesia noted
- Immediate headache & nausea which persisted
- Primary care team notified by patient's mother on 5/29 & referral was placed to our clinic

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CONCUSSION CASE

HISTORY:

- Symptoms in first 24 hours by standardized Post Concussion Symptom Score (PCSS) totaled 8/132 with 6/6 for headache and 2/6 for nausea
- At the time of first visit on 6/3/19 the symptom score had increased to 53/132 (see next slide)


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CONCUSSION CASE

| | |
|----------------------------|-----|
| • Headache | 5/6 |
| • Nausea | 0/6 |
| • Vomiting | 0/6 |
| • Balance Problems | 0/6 |
| • Dizziness | 4/6 |
| • Fatigue | 3/6 |
| • Trouble falling asleep | 0/6 |
| • Sleeping more than usual | 5/6 |
| • Sleeping less than usual | 0/6 |
| • Drowsiness | 5/6 |
| • Sensitivity to light | 4/6 |
| • Sensitivity to noise | 5/6 |
| • Irritability | 5/6 |
| • Sadness | 3/6 |
| • Nervousness | 0/6 |
| • Feeling more emotional | 3/6 |
| • Numbness or tingling | 0/6 |
| • Feeling slowed down | 5/6 |
| • Feeling mentally foggy | 0/6 |
| • Difficulty concentrating | 6/6 |
| • Difficulty remembering | 0/6 |
| • Visual problems | 0/6 |
| • TOTAL SYMPTOM SCORE | |
| • 06/03/2019: 53/132 | |
| • NECK PAIN: 0/6 | |

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CONCUSSION CASE

PAST CONCUSSION HISTORY:

- 1 previous concussion


DETAILS:

- DOI: 7/31/18 - Soccer related.
- Managed by Ophthalmology for traumatic iritis left eye

PAST HISTORY OF...

- Car sickness: None
- Migraines in the patient: None
- Family history of migraines: None


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CONCUSSION CASE

- **Vestibular/Ocular Testing:**
- Smooth Pursuits and Midline-Shift assessments: EOMI with no nystagmus noted. *Patient notes eye strain.*
- Visual tracking of object from periphery to midline with eyes fixed straight ahead is accurate.


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CONCUSSION CASE

- **ACCOMMODATION TESTING** please note that normal near-point maximums and recovery distance should generally be less than 4 cm for patient's age group:
- Accommodation testing (near point blurred-vision testing) is 10 cm in the **LEFT** eye.
- Recovery = 9 cm
- Accommodation testing (near point blurred-vision testing) is 13 cm in the **RIGHT** eye.
- Recovery = 4 cm


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CONCUSSION CASE

- For the following **CONVERGENCE TESTING** please note that normal near-point for all ages is approximately 6 cm, and recovery distance should be less than 4 cm:
- **Trial 1:** Convergence testing (near point double-vision testing) is 3 cm. Recovery = 5 cm
- **Trial 2:** Convergence testing (near point double-vision testing) is WNL (4-5cm). Recovery = None
- **Trial 3:** Convergence testing (near point double-vision testing) is WNL (4-5cm). Recovery = None

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CONCUSSION CASE


Saccades:

- Rapid horizontal saccades DO reproduce concussion symptoms - increases **dizziness and nausea**.
- Rapid vertical saccades DO reproduce concussion symptoms - increases **headache, dizziness, and nausea**. *Patient has difficulty finding top thumb.*

VOR:

- Rapid horizontal head movements with eyes focused on fixed point do NOT reproduce concussion symptoms.
- Rapid vertical head movements with eyes focused on fixed point DO reproduce concussion symptoms - increases **headache, dizziness, and nausea**.

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CONCUSSION CASE

Motion sensitivity:

- Full body, repetitive twisting in each direction with eyes focused on fixed point and head and body moving in the same plane as that fixed point DOES reproduce concussion symptoms - increases **headache, dizziness, and nausea**.

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CONCUSSION CASE

She was provided a written plan for her remaining days of school year as top priority:

1. No contact/collision activities.
2. No exertional activities until cleared to do so by me or one of our athletic trainers.
3. May need to stay home or end the school day early and/or avoid mental exertional activities such as homework and/or exams. May need to be dismissed from a particular class if symptoms are worsening during that class.
4. Will likely need to avoid work with computers or in areas with bright lights and/or loud noises. ANY CELL PHONE USE IN SCHOOL SHOULD BE FOR EMERGENCY PURPOSES ONLY.
5. **Only able to do 1 test/day. Will need an additional 30-60 minutes for testing.**
6. **Needs to have tests in printed (typed or written) format with increased font size.**

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CONCUSSION CASE

Recheck appointment 6/7:

- She finished school year with passing grades
- Headaches persisted, and worsened with visual stimuli
- Her PCSS had decreased from 53/132 to 37/132
- VOMS was significant for symptoms with saccades & motion sensitivity (vision processing), but NOT with VOR (vestibular)

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CONCUSSION CASE

ImPACT testing:

| | |
|---------------------|-------------|
| • COMPOSITE SCORES: | CLASSIFIED |
| • | |
| • VERBAL MEMORY: | |
| • TEST 1 = 88 | AVERAGE |
| • | |
| • VISUAL MEMORY: | |
| • TEST 1 = 79 | AVERAGE |
| • | |
| • PROCESSING SPEED: | |
| • TEST 1 = 28.17 | LOW AVERAGE |
| • | |
| • REACTION TIME: | |
| • TEST 1 = 0.77 | IMPAIRED |


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CONCUSSION CASE

- Patient was referred to see Kim Grabe OTR/L
- Started vision therapy with Kim on 6/12/19
- Saw me on 6/25 and had started feeling better on 6/20/19
- She was going on walks for 25-30 minutes each day and was participating in non-contact soccer activities without symptoms
- Still was finding vision processing problems in busy environments for prolonged periods.
- PCSS was down to 16/132 & VOMS was normalizing


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CONCUSSION CASE

- DATE OF TEST 1 = 6/10/2019 (POST-INJURY #1)
- DATE OF TEST 2 = 6/25/2019 (POST-INJURY #1) NEW BASELINE
-
- COMPOSITE SCORES: CLASSIFIED
-
- VERBAL MEMORY:
- TEST 1 = 88 AVERAGE
- TEST 2 = 94 HIGH AVERAGE
-
- VISUAL MEMORY:
- TEST 1 = 79 AVERAGE
- TEST 2 = 76 AVERAGE
-
- PROCESSING SPEED:
- TEST 1 = 28.17 LOW AVERAGE
- TEST 2 = 32.02 AVERAGE
-
- REACTION TIME:
- TEST 1 = 0.77 IMPAIRED
- TEST 2 = 0.64 AVERAGE

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CONCUSSION CASE

- Will progress her through exertion testing once she is symptom free
- She will be rechecked with me on 7/9 & hopefully be cleared for contact

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