HEADS UP ON CONCUSSION
THINGS THAT MAKE A DIFFERENCE

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SPORTS RELATED CONCUSSION
MILD TRAUMATIC BRAIN INJURY

Transient disturbance of neurological function induced by direct or indirect forces resulting in a variety of signs and symptoms

ASSESSMENT: National campaign

6 R's
RECOGNISE
REMOVE
REFER
REST
RECOVER
RETURN

ASSESSMENT: Side-line Tools

Side-line Tools we may have:
- Our Clinical Instruments (Eyes & Ears)
- SCAT Forms / HIA Forms (Rugby)
- King-Devick (K-D) Test
- Video Footage (parents with cameras)
- Pocket CRT = NON MEDICAL people to assist with identification of concussion and immediate management and NOT a tool to be used to put players back on the field
- Biomarkers – Prof Tony Belli (University of Birmingham & RFU)
ASSESSMENT: Side-line Tools

**HIA - SCAT Forms**

The International Rugby Board (IRB) Pitch Side Concussion Assessment trial: a pilot test accuracy study
Gordon Ward Hall, Simon F Tegg, Philippe Deqi

SCAT Forms / HIA Forms (Rugby)
- sensitivity (true positive) 85%
- specificity (true negative) 74%

Given the reported prevalence, team doctors could be between 79% and 94% sure that a player will not have concussion following a negative PCSA test at a 95% confidence level.


ASSESSMENT: Side-line Tools

**King Devick Test**


ASSESSMENT – Side-line Tools

- Increase in the detection of concussions compared to reported or witnessed events BUT not validated at the time with no sensitivity / specificity data
- No stand-alone test
- K-D sensitivity 53%
- specificity 69%
- Used with existing SCAT complementary 89% concussions


ASSESSMENT – What makes a difference?

1. Education
2. Improved detection
3. Recognise and remove side-line testing / video footage
4. Early removal improves post-concussion prognosis, reduces risk of 2nd impact, reduces risk of additional injury

MANAGEMENT

**Keep It Simple**

Initial Rest 24 – 48 hours
Light exercise after this time period providing does not worsen symptoms
Relative mental rest
Avoid alcohol
Simple analgesia only
Consider work & school impact

**For 10 – 14 Days**

Cervicovestibular rehabilitation in sport-related concussion: a randomised controlled trial

Treadmill Testing - VOMS

- Use 80% symptomatic HR for intensity exercise only: limit movement
- 20 mins duration x6 per week

Cervical Spine Examination

- ROM – cervical flexion head rotation test – Spurling’s test

Vestibular Assessment

- Modified VOMS - smooth pursuits / saccadic eye movements / VO reflex (head thrust) / vision motion sensitivity test +/- Dix Hallpike test

Management

Our Experience – Axis Sports Concussion Clinic

Data - Discharged Patients

<table>
<thead>
<tr>
<th></th>
<th>Age Under 19 Yrs</th>
<th>Age Over 19 Yrs</th>
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<tbody>
<tr>
<td>Average Age</td>
<td>15.5 yrs</td>
<td>25.7 yrs</td>
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<tr>
<td>Gender</td>
<td>M 68 F 12</td>
<td>M 69 F 9</td>
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<td>Type</td>
<td>Simple Complex</td>
<td>Simple Complex</td>
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<tr>
<td>Average No of F/U Visits</td>
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<td>Average No of Days Until Asymptomatic</td>
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<td>Initial SAC Score</td>
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<td>Initial Symptom Score</td>
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<tr>
<td>Initial Symptom Severity</td>
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</table>

Recovery prolongation risk co-factors:

- Previous prolonged recovery <12 months
- Medical history ADHD / Mood Disorder
- Age and gender – adolescent females
- Symptom severity >30
- Non sports related concussion

Meehan et al. (2014) “Early symptom burden predicts recovery after sport-related concussion” Neurology 83(Dec 9): 2204-2210
PREVENTION – Cx Spine Muscles

Neck Strength: A Protective Factor Reducing Risk for Concussion in High School Sports


Large multicentre study (Ohio) >6000 participants, all high school aged with 179 concussions over 2 years.

Measured strength >20kg in extension / flexion / side bending reduced the risk of concussion BUT for every increase of 0.45kg in neck strength the risk of concussion reduced by 5%


PREVENTION - Equipment

The evidence for mouthguard use in preventing SRC is mixed, but meta analysis suggests a non-significant trend towards a protective effect in collision sports.

Concussion Consensus Statement CISG 5th Edition

PREVENTION – LAW CHANGES

Red cards for head contact

Rugby - will this just transfer risk from tackled person to tackler(s)

What makes a difference?

1. Neck strengthening: absolute strength ↑10% increase → ↓risk by 5%

2. Law Changes: how can we help? (robust injury surveillance studies / data)
Key Points that I Can Use on Monday

1. We ALL have a responsibility to educate
2. Management – REST for 24 – 48hrs only then light exercise and relative mental rest. Refer early if symptomatic still Day 10 for multi-disciplinary active management
3. Watch for poor prognostic indicators – consider INITIAL symptom severity as one
4. Neck strengthening for prevention