

# Letters

## A 10-YEAR REVIEW OF UNSTABLE THORACOLUMBAR SPINAL FRACTURES FROM NORTHERN IRELAND: THE ASSOCIATED INJURIES

Editor,

Trauma is the leading cause of death in young people (aged <50years) and a recent study showed that 10% of these patients have spinal injuries. <sup>(1)</sup>

Looking at it from the other side; thoracolumbar spinal fractures managed with surgical stabilisation in our regional unit are often associated with other significant injuries. An awareness of these associated injuries aids early diagnosis and management. In these cases, any delayed or missed diagnoses could result in significant morbidity and mortality.

Our unit is the regional trauma centre with around 90 inpatient fracture beds, there is often up to 50% bed occupancy with spinal patients. Our spinal referrals are increasing at a rate of approximately 10% per year.

We aimed to identify the prevalence of associated injuries in patients admitted with unstable thoracolumbar fractures.

The fracture outcome research database was interrogated to identify all surgically managed thoracolumbar spinal admissions to our unit over a 10-year period. A sample of 210 cases spanning that time period was identified and all early imaging was retrospectively reviewed and additional injuries were recorded.

Of the 210 cases reviewed, 80 (38%) had an associated injury. Of those 80, 46 (58%) had a single additional injury, 20 (25%) had 2 additional injuries and 14 (18%) had 3 or more additional injuries

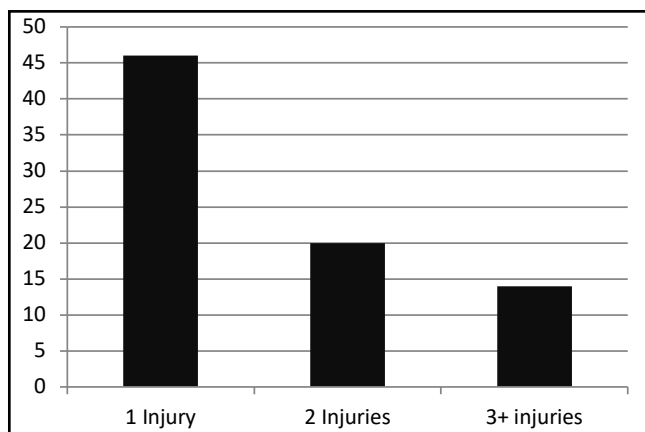


Fig 1.

From our sample other injuries were common, with 17% of patients having a further spinal injury, 16% other orthopaedic injury, 16% rate of thoracic trauma, 6% abdominal trauma and much rarer were facial trauma and brain/ neurological trauma at only 2% each.

Looking in more detail at some of the more common injuries.

Thoracic trauma was one of the more common pathologies with 11% having rib fractures, 6% having either a pneumo or haemothorax, sternal fractures were found in 4% with a further 1% having an aortic injury.

Abdominal trauma was far less common with 2% having splenic injuries, liver, renal, mesenteric and small bowel injuries having only a 1% incidence respectively.

The other orthopaedic injuries were varied and made up of upper limb injuries (6%), foot injuries (5%), os calcis or pelvic injuries (4% each) and tibia or femur injuries only 2% each.

All of these associated injuries are serious with potentially life changing implications.

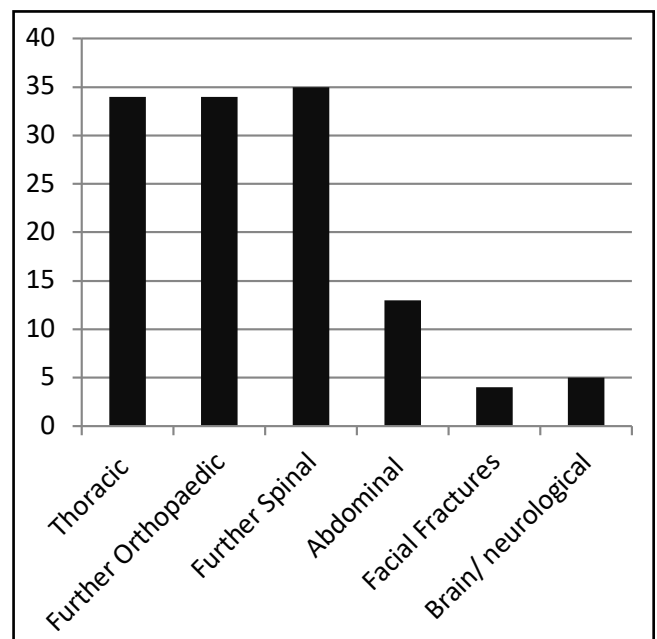


Fig 2.

We have shown that a significant number of unstable thoracolumbar fractures have additional injuries especially chest trauma, further spinal fractures and other orthopaedic injuries.

Further studies should be performed looking at the classification of these fractures and any associated injuries as well as where these patients are managed as we feel a High Dependency setting may be most appropriate.

We conclude that a high index of suspicion is required in the assessment of these patients and a multispecialty as well as multidisciplinary approach is required in their management.

Thomson S, Julian H, McLorinan G, Verzin E, Hamilton A, Eames N  
Royal Victoria Hospital, Belfast, Grosvenor Road, Belfast, Northern Ireland

Correspondence to: Stacey Thompson

E-mail: staceylthomson@hotmail.co.uk

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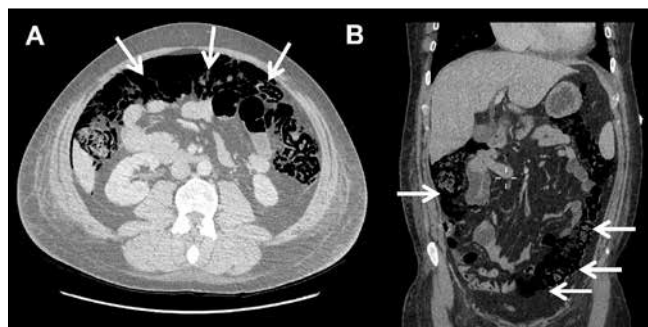


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### AN UNUSUAL GASTROINTESTINAL COMPLICATION FOLLOWING HEART TRANSPLANTATION.

Editor,

A 29-year-old man underwent uncomplicated cardiac transplantation for advanced heart failure secondary to hypertrophic cardiomyopathy. Nine days post-operatively he required aggressive escalation of immunosuppression for 3 days with methylprednisolone due to an episode of severe cell-mediated rejection which promptly resolved. A routine chest radiograph a further 6 days later unexpectedly demonstrated free sub-diaphragmatic air. On subsequent assessment he admitted to only very mild abdominal discomfort. On examination his abdomen was distended and tympanic with active bowel sounds and no signs of peritonism. Inflammatory markers and lactate were normal. Due to concern regarding the possibility of gastro-intestinal perforation secondary to high dose steroid therapy an abdominal CT scan was undertaken. This confirmed the presence of pneumoperitoneum and also demonstrated extensive gaseous infiltration of the bowel wall and the omentum from the caecum extending as far as the distal descending colon with sparing of the sigmoid (Figure 1a and b) in keeping with a diagnosis of pneumatosis intestinalis. There was no radiological evidence of bowel ischaemia. Cytomegalovirus was not detected in blood or faeces. He was managed conservatively with 5 days of intravenous amoxicillin and metronidazole with complete resolution. He remains well 1 year later.



**Fig 1.** Axial (1A) and coronal (1B) views from a contrast computed tomography scan of the abdomen demonstrating extensive pneumatosis intestinalis of the large bowel. The dark areas (arrowed) represent extensive submucosal gas.

Pneumatosis intestinalis is a radiological diagnosis and occurs when the gastrointestinal wall becomes disrupted and infiltrated by intra-luminal gas<sup>1</sup>. It can have a benign or life-threatening course, largely dictated by the underlying aetiology, and has a reported association with a variety of conditions including bowel ischemia, intestinal obstruction,

inflammatory bowel disease, connective tissue disorders and chronic obstructive pulmonary disease<sup>2</sup>. It is best diagnosed with CT and has rarely been reported following renal, lung and liver transplantation<sup>2</sup> and even less so following heart transplantation<sup>3</sup>. It has been speculated that pneumatosis intestinalis in the post-transplant setting may be related to multiple effects of immunosuppression including hyperactivity of the colonic flora as well as steroid-induced atrophy of Peyer patches and the gastro-intestinal mucosa with consequent invasion of the submucosa by intra-luminal gas<sup>4</sup>. From the limited literature regarding post-transplantation pneumatosis intestinalis, the large bowel seems to be more commonly affected than the small bowel and the majority of cases fully resolve with careful monitoring and conservative management alone<sup>3,5</sup>. Our patient had required prolonged treatment with high dose methylprednisolone due to an episode of allograft rejection which was the likely a major causative factor. This case reduces the paucity of literature on a rare complication of heart transplantation. It appears to be associated with a benign course in the majority of cases; however, care must be taken to exclude the coexistence of more malignant processes underlying this presentation, such as cytomegalovirus related colitis, in post-transplant patients.

**Keywords:** heart transplant, immunosuppression, pneumatosis intestinalis

Alison I Smyth, Advanced Heart Failure Fellow <sup>1</sup> Joanna Osmanska, Core Medical Trainee <sup>1</sup> Stefanie Lip, Advanced Heart Failure Fellow <sup>1</sup> Peter S Chong, Consultant Colorectal Surgeon <sup>2</sup> Jonathan R Dalzell, Consultant Cardiologist <sup>1</sup>

<sup>1</sup> Scottish National Advanced Heart Failure Service, Golden Jubilee National Hospital, Glasgow, G81 4DY, UK <sup>2</sup> Department of General Surgery, Glasgow Royal Infirmary, Glasgow, G31 2ER, UK.

Correspondence: Dr Alison Smyth

Scottish National Advanced Heart Failure Service, Golden Jubilee National Hospital, Glasgow, G81 4DY, UK

Email: alisonsmyth@doctors.net.uk

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### BIRTH RATE MAY INCREASE NINE MONTHS AFTER NATIONAL FOOTBALL SUCCESS

Editor,

We noted an increase in referrals to prenatal genetic clinics



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TABLE 1:

*FIFA World Cup and UEFA Euros start and finish dates with corresponding expected due date (E.D.D), 2006-2017.*

|                       | Tournament start | Tournament finish | E.D.D start | E.D.D finish |
|-----------------------|------------------|-------------------|-------------|--------------|
| <b>FIFA World Cup</b> | 12/06/2014       | 13/07/2014        | 05/03/2015  | 05/04/2015   |
|                       | 11/06/2010       | 11/07/2010        | 04/03/2011  | 03/04/2011   |
|                       | 09/06/2006       | 09/07/2006        | 02/03/2007  | 01/04/2007   |
| <b>UEFA Euros</b>     | 10/06/2016       | 10/07/2016        | 03/03/2017  | 02/04/2017   |
|                       | 08/06/2012       | 01/07/2012        | 01/03/2013  | 24/03/2013   |
|                       | 07/06/2008       | 19/07/2008        | 28/02/2009  | 11/04/2009   |

after large sporting events such as the UEFA European Championship (Euros) and World Cups. Few reliable studies are reported, although birth spikes nine months after events are described in South Africa after they hosted the 2010 FIFA World Cup<sup>1</sup>, the USA Super Bowl championship<sup>2</sup> and following a last-minute goal by Barcelona in the 2009 UEFA final<sup>3</sup>.

We examined live birth rates nine months after the six UEFA Euros and FIFA World Cups, between 2006-2017<sup>4</sup>. The expected due date (E.D.D) of births, conceived during the period, was calculated as 38 weeks following the beginning and end of the tournaments, assuming births at ~40 weeks gestation. The tournaments occurred in June - July, so the E.D.D range corresponds to the following March (Table 1). We compared live births in March, as a proportion of total births for the corresponding year, with the average birth rate in the contiguous February and April, using chi-squared analysis.

## RESULTS

Birth rates for the following March ranged from 1,780 to 2,113 (7.3% to 9.2% as a proportion of total births for each corresponding year). Average birth rates for February and April combined, ranged from 1,930 to 1,873 (7.2% to 8.1%) (Table 2).

We observed no significant difference in the proportion of live birth rates between 2007 – 2015, however, a statistically significant increase in births was noted in March 2017, nine months after the 2016 UEFA Euros Championship, compared with the contiguous February and April (2% (0.516 to 3.549), p 0.008) (Table 2). 2016 was the first occasion when the Northern Ireland (NI) football team qualified to compete in the UEFA Euros tournament and the team achieved relative success, reaching the second stage.

We postulate that the increase in birth rate nine months after NI's first appearance in the UEFA Euros may be the result

TABLE 2:

*Comparison of proportionate births in March and February/April, corresponding to the E.D.D for conceptions occurring during World Cup and UEFA Euros tournaments (2007-2017).*

| Year              | March births <sup>a</sup><br>% (n) | Average February/<br>April births <sup>b</sup><br>% (n) | Difference in births (%)<br>March v. February/April | p. value <sup>c</sup> | 95% Confidence<br>Intervals <sup>c</sup> |
|-------------------|------------------------------------|---|---|-----------------------|--|
| 2017 <sup>^</sup> | 9.2<br>(2,113)                     | 7.2<br>(1,658)  | 2   | <b>0.008</b>          | <b>0.5136 - 3.5493</b>                   |
| 2015 <sup>*</sup> | 8.1<br>(1,966)                     | 7.7<br>(1,873)  | 0.4   | 0.593                 | 1.0399 - 1.9231                          |
| 2013 <sup>^</sup> | 7.3<br>(1,780)                     | 8.1<br>(1,930)  | 0.8   | 0.298                 | 0.7353 - 2.2324                          |
| 2011 <sup>*</sup> | 8.6<br>(2,181)                     | 7.3<br>(1,856)  | 1.3   | 0.072                 | 0.1136 - 2.7810                          |
| 2009 <sup>^</sup> | 8.4<br>(2,086)                     | 8.1<br>(4,023)  | 0.3   | 0.685                 | 1.1229 - 1.8014                          |
| 2007 <sup>*</sup> | 7.9<br>(1935)                      | 7.7<br>(3,765)  | 0.2   | 0.789                 | 1.2340 to 1.7202                         |

- a. March births (%) calculated as a proportion of total births for the corresponding year.  
 b. Average of February and April births, calculated as a proportion of total births for the corresponding year.  
 c. P-values and 95% Confidence intervals calculated using chi-squared test.  
 ^ Year corresponding to a conception during a UEFA European Championship.  
 \* Year corresponding to a conception during a FIFA World Cup Championship.



of a potent combination of national excitement, enthusiastic fervour, celebration and inebriation.

Although there are few existing studies looking at the relationship between sporting events and birth rates, our findings are consistent with the South African World Cup, the USA Super Bowl and Barcelona UEFA reports<sup>1-3</sup>. Mechanisms by which large sporting events influence reproductive behaviour are complex. Increased alcohol consumption, disinhibited behaviour and a sense of well-being as a result of national pride and excitement, may play a role. The association between the March 2017 birth rate in Northern Ireland and the timing of the 2016 UEFA Euros tournament does not prove causation and there may be other factors such as seasonal light and temperature variations and no significant rise in birth rate was noted following the other five football tournaments that we examined.

Future research may look at other sporting events (e.g. Olympics, Rugby World Cup). Any impact on reproductive behaviour may depend on which national team is competing and the degree of their success within the tournament. Following the relative success of England in the 2018 World Cup, we may see a spike in "World Cup babies" in March 2019.

Dr. Caoimhe S. McKenna<sup>1</sup>, Clinical Genetics Registrar & MD Student, UCL Great Ormond Street Institute of Child Health: Caoimhez.mckenna@belfasttrust.hscni.net. Dr. Anna Znaczk<sup>1</sup>, Clinical Genetics Registrar: Anna.znaczk@belfasttrust.hscni.net. Prof. Patrick J. Morrison<sup>1</sup>, Consultant Clinical Geneticist & Honorary Professor of Human Genetics: Patrick.morrison@belfasttrust.hscni.net

<sup>1</sup>Northern Ireland Regional Genetics Service, Belfast City Hospital, Belfast BT9 7AB. UK

#### CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare

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#### ASSESSMENT OF HYPONATRAEMIA IN ACUTE MEDICAL PATIENTS

Editor,

Hyponatraemia is defined by a sodium level of less than 135mmol/L and is the commonest electrolyte abnormality,

occurring in 15-20% of hospital patients<sup>1</sup>. It has also been identified as an independent predictor of mortality and is associated with severe complications such as cerebral oedema<sup>2,3</sup>. Despite this, the management of hyponatraemic patients has been poor<sup>1,4</sup>.

The aim of our study was to evaluate the assessment of hyponatraemia in newly admitted hospital patients.

#### METHODS

Our study was a retrospective data collection analysis. Using data provided by the Biochemical laboratory at a South London hospital, we analysed patients that were admitted to their Acute Medical Unit with sodium levels below 133mmol/L (the trust's definition), across July and August 2017. Patients were excluded if their hyponatraemia developed after their Post-take ward round or if it was in the context of a hyperglycaemia (>20mmol). We separated patients by severity of their hyponatraemia – mild 130-133, moderate 120-130 and severe <120 - then further analysed data within these groups. Our analysis focused on the period between the patient's admission clerking notes and their post-take ward round notes – however we did look further in their notes to look at whether they had been admitted to ITU in that respective admission.

#### RESULTS

Our study revealed that 101 patients were admitted to AMU with hyponatraemia during the July-August 2017 period. 53/101 (52%) patients had their glucose checked. 2/53 were revealed to have a glucose level of above 20mmol/L and therefore had pseudohyponatraemia. We have excluded these two patients from further analysis. For the new patient group of 99 patients: 36 had mild hyponatraemia (130-133mmol/L), 51 had moderate hyponatraemia (120-130mmol/L) and 12 had severe hyponatraemia (<120mmol/L)

Reassuringly, all patients with severe hyponatraemia had this documented in their notes (12/12 100%), followed by the moderate category with 34/51 (67%), and the mild with 10/36 (28%). However, there was no such relationship between severity and volume assessment. Only 34% of patients had a volume assessment in the context of their low sodium (mild 28%, moderate 31%, and severe 67%).

Urinary sodium was poorly requested in the mild and moderate categories (0% and 7.8% respectively). Although, in severe hyponatraemia 75% of patients had a urinary sodium test requested. For good practice, it is recommended to check glucose levels AND request a urinary sodium in all patients presenting with hyponatraemia. This occurred in 7% of patients (including 2 excluded earlier). The majority of these patients (4/7) had severe hyponatraemia.

4/99 patients had their care escalated to the intensive care unit eventually at some point during their admission. However none of these patients were admitted with severe hyponatraemia.



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## CONCLUSION

Overall: 1. The recognition and investigation of hyponatraemia in acute patients is poor; although there is some improvement with increasing severity of hyponatraemia. 2. Investigations for hyponatraemia – blood glucose, urinary sodium and volume status assessment – aren't performed in all patients. 3. The majority of hyponatraemic patients do not become critically ill requiring ITU admission.

*Raafae Rana, Amrita Saravanan, Hisham Nizar*

Acute Medical Unit, Croydon University Hospital, London.

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