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Case Report

Multi-trauma secondary to hypocalcaemia-induced seizure: A case report

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ABSTRACT

Introduction: Fractures are known sequelae of seizures. We present a young male with bilateral acetabula and surgical neck of humerus (SNOH), right neck of femur (NOF) and thoracolumbar fractures in the context of a hypocalcaemic seizure secondary to severe malnutrition, secondary hyperparathyroidism and vitamin D deficiency. The authors believe that numerous severe injuries in a single patient secondary to seizure are extremely rare and have not been seen in the literature.

Case report: A 25-year-old male presented to A&E following a collapse. He described limited movement and pain in all four limbs and collateral history described a generalised tonic-clonic seizure. XR and CT identified pelvic, femoral and humeral fractures, as well as compression fractures of T11, T12 and L1 vertebrae. His pelvic, femoral and SNOH fractures all required ORIF with intra-operative biopsy revealing abnormal bone quality. His spinal fractures did not require management. His young age and severe injuries prompted endocrinology and neurological evaluation. These revealed severe malnutrition secondary to behavioural and dietary factors with severe hypocalcaemia, secondary hyperparathyroidism and vitamin D deficiency. His metabolic and nutritional deficits were replaced intravenously and orally and his seizure attributed to hypocalcaemia.

Discussion and conclusion: Clinical suspicion for fractures should be high as the rate of fracture following seizure is approximately 6% [1]. Close

Abbreviations: CT, Computerised Tomography; XR, X-ray; ORIF, Open Reduction Internal Fixation; EEG, electroencephalogram; ALP, alkaline phosphatase; PTH, parathyroid hormone; 25(OH)D, 25-hydroxyvitamin D; A&E, accident and emergency; NOF, neck of femur; SNOH, surgical neck of humerus.

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evaluation and tertiary survey should be completed as missed musculo-skeletal injury has been reported to be over 10% [2] and pre-existing medical and social risk factors may increase the incidence of these injuries [3–4].

Given the young man's presentation, a high clinical suspicion was held for an underlying syndrome such as osteomalacia. Secondary to early aggressive treatment, a biopsy performed was non-diagnostic and features of osteomalacia were not present. Due to the potential consequences of a seizure, the authors recommend individuals who present with seizure or collapse be thoroughly examined and investigated to ensure no co-existing injury or pathology.

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Introduction

Bony injuries are known sequelae of seizure activity. However, multiple injuries involving all four limbs in young patients are extremely rare. We present an unusual case of a 25-year-old male with multiple significant fractures following a hypocalcaemic seizure, including: bilateral fracture acetabula and femoral protrusion, bilateral surgical neck of humerus fractures, thoracolumbar spine compression fractures (T11, T12 and L1), and a right neck of femur fracture. This occurred in the setting of severe metabolic and nutritional derangement secondary to altered dietary habits, physical activity levels and social isolation. Informed consent was given by the patient for this report.

Case report

A 25-year-old man initially presented to our hospital following an unknown mechanism where bilateral groin pain and limited movement in all four limbs were noted after falling unconscious in the backseat of a car. Computerised Tomography (CT) scan identified multiple injuries including bilateral acetabulae and surgical neck of humeri, thoracolumbar and right neck of femur fractures.

Collateral history from family suggested that the young man might have had a seizure in the backseat of the car. Relevant history included a potential previous episode of a seizure 2 years ago that did not result in significant injury but was never investigated. He was described as socially withdrawn, sedentary, had a poor diet and rarely ventured outside of his room. Psychiatric review found no signs of psychosis or an autism

Table 1
Initial biochemistry, coagulation profile and vitamin levels.

Test	Result	Reference range
Calcium	1.41 mmol/L	2.15–2.65
Corrected calcium	1.66 mmol/L	2.15–2.65
Albumin	26 g/L	38–50
Magnesium	0.61 mmol/L	0.70–1.10
Phosphate	0.59 mmol/L	0.75–1.50
Zinc	10.9 µmol/L	12–18
Vitamin D 25 (OH)D	<10 nmol/L	>50
PTH	81.8 pmol/L	1.6–6.9
Vitamin B12	97 pmol/L	150–857
Vitamin A	0.3 µmol/L	1.0–2.8
Vitamin E	10.8 µmol/L	12–42
ALP	459 U/L	35–110
INR	1.5	0.9–1.3
Prothrombin Time (PT)	18.6 s	10.6–15.3

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