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REVIEWER'S COMMENT

Expert's comment concerning Grand Rounds case entitled "Traumatic atlantoaxial rotatory fixation in an adult patient" by MA García-Pallero, et al. (Eur Spine J, 2017; DOI 10.1007/s00586-016-4916-3)

Ashton Vice[1]

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This interesting paper and literature review outline a rare cervical condition in adults of bilateral atlantoaxial rotational fixation (AARF) [1]. Importantly, AARF can present to most spinal practitioners, irrespective of a surgical or conservative training or learning, as a common biomechanical condition, post-traffic accident torticollis. AARF is not an uncommon event in younger age-groups and even occurs in infants.

AARF in adults is, however, extremely rare, and the English medical literature describes very few cases [1].

Practitioners should be reminded that this condition is one of cervical instability and due to the anatomical site of injury one of the consequences thereof includes death.

The paper includes reviews of 16 previous cases from the English literature of AARF, categorised as Fielding type 1, with transverse and alar ligaments intact and a preserved atlantoaxial distance [4].

✉ Ashton Vice
saukuae@yahoo.co.uk

[1] London Spine & Joint Clinic, 14 Norfolk Place, London W2 1QJ, UK

The paper also outlines the method of the high cervical trauma as well as treatment options, these being surgical reduction or reduction by the more conservative approach of cervical traction.

Interestingly, upon reviewing the non-English literature, a very relevant Polish publication [2] reports 3 cases of traumatic AARF in adults, as a result of head-on traffic accidents. The authors state that although the syndrome was a rare event in adults, the condition should be considered in the differential diagnosis of post-traumatic neck pain and limitation of movement, with or without evident torticollis. Furthermore, one patient had a 45-day delay in diagnosis and the authors correlated a delay in diagnosis to a poor outcome. Rigid cervical immobilisation occurred for 50–60 days in all three cases.

This Grand Round's paper [1] describes the severe upper cervical injury of AARF after a traffic incident in a 28-year-old female. Although the patient sought immediate treatment at A&E, the AARF was only correctly diagnosed, after appropriate assessment, 1 week after the accident. This case clearly illustrates the difficulty in appropriate timeous diagnosis of AARF, even at a hospital setting. A clinical decision was decided upon to embark on conservative treatment. This consisted of progressive traction, 5 kg, over 24 h, during which time period reduction was achieved. Sixteen weeks of a rigid collar immobilisation followed. The post-procedure course was good, and the patient regained full cervical mobility with an improvement in cervical neck pain. An excellent clinical outcome was achieved at 4-year follow-up.

This paper highlights the clinical judgement dilemma facing all clinicians, be they surgeons or conservative practitioners, whether to either embark upon a surgical interventional course or adopt a conservative approach. Whichever is decided upon, the probability exists, from the literature, of a poor outcome if there is a delayed diagnosis.

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However, it must be kept in mind that the assessment and management dilemma of all patients remain the same for both the surgical and the conservative branches of spinal care. A judicious history and comprehensive physical examination, encompassing both "orthopaedic" and "neurological" assessment, followed by further investigations, were appropriate. In the described paper [1], the appropriate investigation routes were correctly followed. In contrast, the paper cited one case, a 44-year-old female who was diagnosed with AARF 180 days after injury [6], and in another cited study of 26 patients, the average time to the correct diagnosis of AARF was 15 months [3].

Surgical colleagues might forget that patients in severe pain, often after traffic accidents, can initially and later, present at both a hospital Emergency Room (Accident and Emergency (A&E) in the UK), and as walk-in elective patients, for example into chiropractor's clinics. Invariably, these patients with a post-whiplash torticollis request an X-ray which would not necessarily be considered normal practice in a UK A&E setting, unless clinically indicated on physical examination.

As such, conservative practitioners also not infrequently become, by default, the patient's primary physician, and in that case, the above outlined assessment should be considered mandatory. The patient should then be immediately referred to the nearest Emergency Room. In our Clinic's case, in the West End of London, referral would be to the nearest A&E, opposite our clinic, or, to a fellow, private-practice colleague (neurosurgeon, neurologist, orthopaedic surgeon and to radiologists, one of which operates an open, Upright MR scan, Magnetic Resonance), which can be considered a multidisciplinary team (MDT) of private practitioners.

This case study article [1] advised that post-reduction of the subluxation, external immobilisation was subsequently instituted by a rigid cervical collar for 16 weeks. That form of immobilisation rather than a more rigid, fixed surgical halo vest was based on the AARF being classified as a Fielding type 1 injury [4]. Neck pain persisted for several months after reduction, but with rehabilitation and medical treatment, her condition improved.

As a conservative practitioner what might have been advantageous in this Grand Rounds single case study would have been to have information on the methods of rehabilitation prescribed, and the respective therapeutic time frames which yielded such a favourable outcome. A not uncommon conservative management dilemma is when, and how, to begin the rehabilitation after such a potentially life threatening upper cervical instability, with or without neurological signs, most often in the face of often profound soft tissue atrophy. A further consideration would be the patient's vulnerable psychological state, having the supportive rigid collar removed after 16 weeks/112 days, must also be considered. Another consideration is the state of the underlying tissues and the hygiene aspects of constant rigid collar immobilisation.

In our experience, the use of the Upright MRI with cervical stress views, has been an invaluable post-traumatic method of enhancing assessment of the mechanics of the craniocervical junction and of the cervical spine structural function in post-cervical stabilisation cases [5]. A highly skilled specialist craniocervical radiologist is de rigueur in these cases.

From the conservative practitioner's viewpoint, whether the chosen cervical treatment is surgical or conservative, the long-term cervical rehabilitation should follow recognised norms: reduction of pain, addressing the soft tissue atrophy, particularly muscular, after several months of cervical spine immobility, restoration of a full range of cervical motion, correction of the sagittal imbalance, and where surgical reduction has been chosen, avoidance of adjacent segment degenerative changes when applicable.

Compliance with ethical standards

Conflict of interest The author declares that there are no competing interests.

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