Ultrasound guided erector spinae plane block for bilateral lumbar transverse process fracture: A new or a pushing indication?

Dear Editor,

We have read with great interest a case report written by Ahiskalioglu et al. [1] entitled "Erector spinae plane block for bilateral lumbar transverse process fracture in emergency department: A new indication". They performed an erector spinae plane (ESP) block at the T10 level for a 60-year-old female patient who presented with a bilateral isolated L2 transverse process fracture. The ESP block was described by Ferero et al. [2]. The ESP block has been used as a postoperative analgesia technique for various indications such as thoracic surgery and mastectomy. Additionally, ESP block was used for rib fractures for patients with trauma [1]. However, in the case report presented by Ahiskalioglu et al., they decided to perform an ESP block for pain management in the seated position. Unfortunately, although they are considered relatively minor injuries, fractures of the transverse processes (TP) of the lumbar vertebrae appear as a consequence of major forces. Patten et al. conducted a study of transverse process fractures in the lumbar vertebrae, and they found that there is a statistically significant association between transverse process fractures and abdominal visceral injuries such as renal, splenic and hepatic injuries. In their study population, the mortality rate was 10% [3]. In another study, the authors determined that transverse process fractures might be a sign of more severe injuries [4].

We would like to enter the debate and address some of our concerns to the authors. 1) What was the cause of the bilateral lumbar transverse process fracture? Was it from a traffic accident or fall? According to the literature, these types of injuries are not common, and it is possible that a TP fracture might present with other injuries. 2) What was the authors rationale for placing the patient in the seated position after a TP fracture? Is it safe to place the patient in the seated position even though the patient could have important concomitant injuries such as liver, renal and spleen injuries? 3) The healing time for a transverse process fracture has been reported to be between a few weeks and 3 months [5]. In addition, acute pain can develop into chronic back pain. We would like to ask the authors whether they think that managing the pain for only 24 h is sufficient to prevent chronic pain? What were the patient's visual analogue scale scores after 24 h? Did the patient need rescue analgesics during the 24 h after ESP block? What type of oral analgesic was administered? Non-steroidal anti-inflammatory drugs or opioids?

In conclusion, despite the successful pain management with ESP block in the present case report, interpretation of the results should be considered in light of the answers to the abovementioned questions.

Financial support

No financial support existing.

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https://doi.org/10.1016/j.ajem.2018.07.048

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Acute presentations of infective endocarditis

Long and Koyfman have highlighted the acute presentation of infective endocarditis (IE) in intravenous drug users [1]. The acute presentation includes a range of pulmonary stigmata which may dominate the clinical picture almost to the exclusion of an index of suspicion for IE. Those stigmata include chest pain, cough, haemoptysis, pulmonary infarction, lung abscess, pleural effusion, and empyema, respectively, all ultimately attributable to septic emboli [2]. Another acute presentation is the one characterised by acute left ventricular failure and severe breathlessness as a result of IE-related acute aortic valve regurgitation. In acute aortic regurgitation, of which IE is a leading cause [3], a sudden excessive volume load is imposed on an unprepared left ventricle that is normal in size. The consequence is a dramatic increase left ventricular diastolic pressure which may approach or even equal aortic diastolic pressure [4]. One of the consequences is a diminution in the intensity of the heart sounds (the so-called "silent precordium") and a diminution in the intensity of the regurgitant aortic murmur [4], or even a complete absence of that murmur [4, 5]. Alternatively, the early diastolic murmur of aortic regurgitation may be replaced by a short mid-diastolic component of the Austin Flint murmur [4, 6]. Another variation is the phenomenon of the "continuously regurgitating mitral valve" [7]. This is attributable to coexisting systolic and diastolic mitral regurgitation in the presence of severe aortic regurgitation, and its occurrence may be indicated by the presence of a soft systolic murmur of mitral regurgitation in addition to the early diastolic murmur of aortic regurgitation [7]. In the latter example echocardiography showed mitral annulus dilatation, normal mitral valve leaflets and cordae tendinae, and systolic and diastolic mitral regurgitation superimposed on severe aortic regurgitation [7]. The presence of diastolic mitral valve regurgitation is indicative of critical severity requiring urgent valve surgery, as shown by the

example of a 46 year old man who presented with pulmonary edema [8]. Operative findings included documentation of perforation of the left coronary cusp, and the presence of a large abscess of the posterior aspect of the aortic root arising from the left sinus of Vasalva. Furthermore, there was severe mitral regurgitation resulting from a flail medial scallop of the posterior leaflet [8].

Aortic valve endocarditis can also present with acute myocardial infarction (AMI). In one 73 year old woman with aortic stenosis, this was attributable to right coronary artery compression secondary to periannular aortic valve abscess [9]. Other aetiopathogenetic mechanisms which have been cited for endocarditis-related AMI include coronary artery embolism and obstruction of the coronary ostium by a large vegetation [10].

The aortic valve is also one for which Streptococcus pneumoniae has a special predilection [11]. According to a review of published cases (111 adults) of pneumococcal endocarditis covering the period 2000 to 2013 the aortic valve is the one most commonly involved (53% of cases) by this disorder, outranking the mitral valve (40.5% of cases) and the tricuspid valve (12.6% of cases). Pneumonia was an associated feature in 45.9%, and meningitis in 40.5%. The association of endocarditis, pneumonia and meningitis (so-called Austrian syndrome) occurred in 26.1%. What is more, peripheral stigmata of infective endocarditis were present in only 4.5% of cases [11]. In one referral centre a comparison between pneumococcal vs non pneumococcal endocarditis (28 cases vs 56 cases) during the period 1991–2013 showed that smoking, alcoholism, heart failure and shock were all significantly ($P < 0.01$ in all instances) commoner in pneumococcal than in non pneumococcal endocarditis. Absence of previously known valve disease was also significantly ($P = 0.047$) commoner in pneumococcal endocarditis. Furthermore, in 32% of pneumococcal cases no murmurs were detected on presentation [12]. Echocardiography failed to detect vegetations in 11% of cases [12]. Patients with pneumococcal endocarditis required surgery significantly ($p < 0.001$) earlier than patients with non pneumococcal endocarditis, and there was a trend towards higher 5-year mortality in pneumococcal endocarditis [12].

In conclusion, IE-presents many diagnostic challenges, some of them unique to intravenous drug abuse, and others unique to involvement of the aortic valve. In both contexts a high index of clinical suspicion is required among emergency physicians.

Acknowledgment

I have no funding and no conflict of interest.

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https://doi.org/10.1016/j.ajem.2018.07.051

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Hospital Information Technology is critical to the success of a point-of-care ultrasound program

Over the past two decades, advances in point-of-care ultrasound (POCUS) technology have not only made it more accessible to providers, but also allowed its integration into the increasingly electronic workflow of the modern healthcare system. The breadth of this integration includes most aspects of a typical POCUS clinical workflow as well as image archival and retrieval, documentation, quality assurance and billing. Attempts to modernize existing processes often lead to alienation of low-end users, which in turn negates the intended benefits of the technology. In this brief commentary, we will define the roles of hospital Information Technology (IT) professionals and Clinical Informaticists (CIs) in modernizing ultrasound (US) workflows and their importance to the success and maintenance of POCUS programs.

An ideal modern POCUS workflow has been outlined by the Emergency Ultrasound Section of the American College of Emergency Physicians [1]. In this workflow, patient identifying information is populated into the US machine at the beginning of each patient US encounter either through an order placed in the electronic medical record (EMR) and wirelessly transmitted to the machine, or through a scanned barcode on the patient wristband. Once US images are obtained and saved on the US machine hard drive, the physician must then interpret and document the findings in the EMR. This can be completed either on the machine and electronically synchronized with the EMR or within the EMR itself. Most modern EMRs contain templated notes for US interpretations and automated billing and coding processes. These templates can be built and optimized to ensure that all critical aspects of the examination are accurately reported. This includes the indication for examination, scope of study, views obtained, findings, interpretation and attestation.

After the POCUS examination is performed and interpreted, reliable and accessible permanent image archival allows for US images to be integrated into the EMR. This is important for patient care, quality assurance, billing and reimbursement. Increasingly, POCUS examinations are being stored on the hospital picture archiving and communication system (PACS). This requires that the US machines communicate with PACS, preferably through a wireless connection. Additionally, the use of a middleware or US workflow solution, such as QPath (Telexy Healthcare, BC, Canada), has been shown to drastically improve US billing [2]. Given the number of components involved in this workflow, building interfaces that accurately share documentation between systems will cut down on redundancy and make the workflow easier to integrate for the end user. As noted by Zwank et al., this requires working closely with