LETTERS TO THE EDITOR

Branch Blockade of the Dorsal Sacral Rami

The recent original research article by Dreyfuss and colleagues [1], presents an interesting perspective on a potential technique to diagnose sacroiliac joint pain of extra-articular origin. However, some questions arise out of the described methodology, which we believe may merit further discussion.

Recent morphological and histological study of the posterior sacroiliac region [2] indicate a specialized and metameric arrangement of a deep fascial layer that is related to a number of adjacent structures in the region. These include the individual dorsal sacral foramen, the associated lateral and medial branches of the dorsal sacral rami, and the long posterior sacroiliac ligament.

The delicate neurovascular lateral branches of the dorsal sacral rami form a variable network of interconnected lateral branches from L5 to S4 dorsal rami [2–4], which lie immediately posterior to the dorsal sacral surface. Significantly, the lateral branches lie within a protective and continuous layer of loose connective and adipose tissue, as they wend their variable path between the dorsal sacral foramina and the gluteal region. Each lateral branch forms interconnected arcades with adjacent lateral branches. The resultant and aptly named dorsal sacral plexus [5] is enclosed posteriorly by a layer of dense fibrous connective tissue that originates at the medial aspect of each dorsal sacral foramen and blends laterally with the erectors spinae apaneurosis at the long posterior sacroiliac ligament of the posterior sacroiliac joint [2].

Upon dissection, the comprehensive resection of sacral multifidus exposes the underlying dense fibrous connective tissue layer within which a small fenestration may be observed, close to the underlying location of each dorsal sacral foramen, and through which the medial branch of the dorsal sacral rami is observed to pass. This layer of dense fibrous tissue encloses a region of adipose and loose connective tissue approximately 2–4 mm thick in which the lateral branches of the dorsal sacral rami course [2].

The protocol implemented by Dreyfuss and colleagues [1], calling for local anaesthetic to be infiltrated “8–10 mm peripheral to the posterior sacral foramina” appears likely, on the basis of our work, to result in the potential blockade of the more superficially situated medial neurovascular branches. However, given the morphology of the deep fascial layer, we conjecture that it is possible for injectate to leak past the deep fascial layer at the point where it is penetrated by the medial neurovascular branch and thereby reach, not only the underlying lateral branch, but the potentially the dorsal rami itself. This might account on the one hand, for the stated high success rate of 70% insensate interosseous and dorsal sacroiliac ligaments reported by Dreyfuss and colleagues, and on the other, for the persistence of sensation of sacroiliac joint capsular distension in 86% of cases when challenged. In such latter cases, it may be that the lateral branch blockade was incomplete. The 20% of cases that did not feel capsular distension, suggests that lateral branch blockade was effective in these cases.

Dreyfuss and colleagues excluded 11 subjects from their study on the basis of “dorsal, inferior or ventral capsular tears”; “unavoidable venous uptake”; “substantial dorsal extravasation”; “lack of pain upon capsular distension”; “extravasation to regional neural elements”; or “inability to inject contrast into the sacroiliac joint.” Potential participants were excluded on the basis of a leakage of contrast medium beyond a perceived morphological boundary. However, the dorsal capsule of the sacroiliac joint is known to be discontinuous [6] and while putative ligamentous or capsular tears have been previously alluded to in the literature on the basis of the leakage of contrast medium beyond perceived morphological boundaries [7], these remain to be anatomically demonstrated, so far as we are aware, by dissection or by histology. It is therefore possible that putative tears may in fact represent “normal” morphology as opposed to pathoanatomy. For example, in considering the “extravasation (of contrast medium) to regional neural elements,” the morphology of the adipose and loose connective tissue region enclosed by the deep fascial layer [2] explains why infiltrated contrast medium is observed to track between the sacroiliac joint and the dorsal sacral foramen. This “extravasation” route is previously reported under similar conditions although the underlying morphology, which provides a basis for the observation, is not [7].

The morphology of the posterior sacral region is complex and we believe it may offer one explanation for well-localizable pain [8–10] that is so frequently observed in the region. Such localizable pain stands in notable contrast to the deep, diffuse, poorly defined pain of recognized intra-articular conditions in the sacroiliac joint, such as pyogenic sacroiliitis or septic sacroiliitis [11–15]. We further consider that a “leakage” of contrast medium may be explained by regional morphology, and where it is not, it remains to be
shown whether such “leakage” has a morphological or pathoanatomical basis.

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CHRISTOPHER McGRATH, PhD
HELEN NICHOLSON, MD
PETER HURST, PhD
Department of Anatomy and Structural Biology
University of Otago
School of Medical Sciences
Dunedin, New Zealand

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