

Editorial

Image-Guided Versus Pain-Guided Interventional Pain Injection

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EDITORIAL

During last three decades, image-guided interventional pain procedures have proliferated as we rely on the accuracy and safety rendered by fluoroscopy, CT, and ultrasound. Indeed, the imaging technique is an indispensable tool for routine procedures such as epidural steroid injection, plexus neurolysis, and joint injections. However, due to the inherent difficulty of localizing pain due to multiple sources of pain and nonspecific radiological findings, one has to be mindful of pitfalls of solely relying on image-guided procedures [1].

Pain is indeed subjective and not visible. Hence, image guided injections are in turn indirect and based on presumptive diagnosis. The technique relies on surrounding anatomical structures as a reference. For that reason, injection is often termed “diagnostic”. Such dilemma is apparent when surrounding reference anatomical structures are absent or unclear. E.g., painful trigger points of muscle origin. In the absence of careful examination and palpation, the painful target is often missed, and medications injected at the wrong site.

Obtaining detailed history and physical examination is imperative in the diagnosing source of pain. The visual inspection of a patient while sitting, standing, and ambulating to look for compensatory posture. First and foremost, the painful region needs to be visualized for obvious changes such as swelling or color changes and carefully palpated. In the absence of obvious visual cues, the painful site needs to be localized via careful palpation or provocation.

Often we are entangled and distracted by an image guided procedure such that we forget that the target is the pain not well known anatomical structure. One needs to remember that “what you see is not what you get.” Often the source of knee pain is not the joint itself. Inflammation of external ligaments supporting the

joint frequently cause pain with movement, and without careful examination, the true source of pain is overlooked. Relying solely on in images such as ultrasound or fluoroscopy often lead to the localization of needle close to the well-known anatomical structure of interest rather than the actual pain source resulting in less than optimal pain relief.

The pain guided technique requires careful palpation of the extra-articular region (muscles, tendons or ligaments) to localize the area of maximal tenderness. Then the needle should be introduced to localize the depth of the painful target. The slow advancement of the needle often provokes the painful site to help with localization. Moreover, injecting a small amount of local anesthetic during the needle advancement further contribute to the localizing painful site. The low pH of the local anesthetics provokes the inflamed site to help with localization. The patient should be asked to respond to the elicited pain during the needle advancement. Co-utilization of image and pain guidance enhances diagnosis; allows us to identify the source of pain and improves efficiency thereby reducing the amount of local anesthetic and steroid requirement. Indiscriminate fanning of local and steroid is imprecise, wasteful, and poses a risk of inadvertent intravascular or CSF injection.

The image-guided procedure helps us to avoid injecting drugs into unintended structures, while patient feedback and pain guided technique help us to locate the source of the pain precisely and enhance patient satisfaction. Thus, the pain-guided injection can indeed complement image-guided to improve accuracy and efficacy of interventional pain procedures.

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