Introduction

Musculoskeletal pain accounts for 15 to 31% of pediatric chest pain encounters, and 9-14% of these patients are diagnosed with costochondritis.1 Since costochondritis is an acute inflammatory condition of the cartilaginous joints between the costal cartilage and ribs, most cases are treated conservatively with rest and non-steroidal anti-inflammatory medications. Refractory cases, however, may require physical therapy and intra-articular steroid injection into the costochondral joints.

We report a case of refractory costochondritis in a pediatric patient that was treated with ultrasound-guided costochondral joint injections.

Case Report

An 11-year-old, 40kg female gymnast was referred to the chronic pain clinic after experiencing chronic chest discomfort, tightness and pain. Her history was significant for an intermittent productive cough that began after a documented exposure to mold. She had undergone an extensive medical workup including chest computed tomography, and she was diagnosed with costochondritis and pleurodynia. After failing treatment with anti-inflammatory medications and physical therapy, she was treated with surface landmark-guided costochondral joint injections. She received some duration of pain relief with these injections, but we elected to perform her subsequent injections with ultrasound guidance to confirm intra-articular (rather than intracartilaginous or superficial) medication placement.

The patient preoperatively self-identified the location of her tender anterior chest wall foci and subsequently underwent general anesthesia prior to the injections. A GE Logiq e™ ultrasound platform with a linear 8-12 MHz transducer was used to evaluate her costochondral joints in long axis view. After the joint space was identified, we injected 2.5 mg of bupivacaine and 5 mg of triamcinolone using a 25-gauge 1.5-inch needle. A total of 12 joints were injected without complications. The patient was discharged from the post-anesthetic care unit without any residual pain.

Discussion and Conclusions

The definitive diagnosis and treatment of costochondritis is challenging because the cartilaginous and joint space inflammation is difficult to visualize utilizing plain film radiographs or tomography. Diagnostic ultrasound may serve a role in identifying effusions, synovitis, increased perfusion, and costal cartilage that is “increased in size compared to the contralateral one” and “appears more echogenic with dot-like hyper-reflective echoes and intense broad posterior acoustic shadowing.”2

In addition to aiding the diagnosis of costochondritis, ultrasound may prove to be a useful therapeutic adjunct to targeted injections. Interestingly, a review from 2006 states “No data are published about ultrasound-guided procedures in parasternal joints.”3 Although pneumothorax is a rare complication of costochondral joint injections (only 1 reported case in the 2004 ASA Closed Claims Database), it is likely a preventable complication with ultrasound guidance.3

Musculoskeletal chest wall pain is a relatively common complaint in the pediatric patient. Although most cases of costochondritis will resolve with conservative management, refractory cases may require intra-articular steroid injection. We report a case of ultrasound-guided, real-time costochondral joint injections in an anesthetized child for the treatment of intractable chest wall pain.

References