Scarring following steroid tendon sheath injections for tenosynovitis in children with juvenile idiopathic arthritis: a single-centre experience

Sirs,

Intra-articular steroid injections are effective in juvenile idiopathic arthritis (JIA), with triamcinolone hexacetonide (THA) being the steroid of choice in recent years (1, 2). Tenosynovitis associated with JIA is being increasingly recognised due to use of imaging modalities such as ultrasound/MRI (3, 4). Ultrasound guided steroid injections can be an efficacious therapeutic intervention for arthritis and tenosynovitis in JIA (5, 6). Superficial skin scarring is a well-recognised complication of intra-articular steroid injections. We conducted a retrospective audit to identify scarring secondary to steroid tendon sheath injections in children with JIA.

All children with JIA who underwent tendon sheath injections in our hospital were identified. All injections were performed under general anaesthesia by a single interventional paediatric radiologist. Ultrasonography (GE Vivid S6 machine, high frequency linear probe 6-13 MHz) was used to guide positioning of needle tip (Quincke spinal needle 22 G used, for visualisation during ultrasonography) and to aid visualisation of dispersion of steroid. Routine follow-up was at 3 to 4 months following injection. Scarring was identified either via documentation or a telephone call to the family (with explanation of relevant anatomical landmarks) if information regarding scarring was not documented during follow-up.

17 patients (5 boys, 12 girls) were identified from June 2009 to April 2012. The median age was 9 years (range 2.5 to 16). 4 had oligoarthritis, 5 extended oligoarthritis, 7 rheumatoid factor negative polyarthritis and 1 systemic arthritis. 3 patients had concomitant uveitis. 10 patients were on methotrexate, 3 on NSAIDs, 2 on Mycophenolate mofetil and 1 each on adalimumab, abatacept, anakinra and oral prednisolone. Tenosynovitis was diagnosed by ultrasound in 83% of episodes and MRI scan in 17%.

58% of adjacent joints (all ankle) had active arthritis and were injected at the same setting. The median interval between detection of tenosynovitis and injection was 7 weeks. Triamcinolone hexacetonide was used in all cases (dose range 5 to 20 mg; median dose 8 mg; dose of steroid was decided by the interventional radiologist depending on the age and extent of tenosynovitis as visualised on real-time ultrasonography). 1% Lidocaine (0.2 ml) was instilled in 7/24 (29%) episodes.

There were 24 episodes of injections, with a total of 36 tendon sheaths injected, all around the ankle. 12 patients had a single episode of injection. 5 patients underwent injections more than once- 2 patients in the same tendon group (*i.e*. ankle flexors), necessitating two further episodes of injections; 3 patients had one further episode of injection, one being in the same tendon (peroneus). The period of quiescence for those requiring repeat injections ranged from 4 to 22 months (median of 6 months). The most frequently injected tendon overall was tibialis posterior (13/36 or 36%).

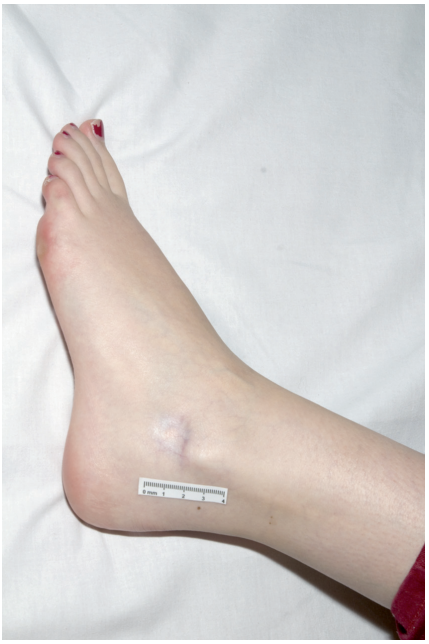

Fig. 1. Scarring at tendon sheath injection site.

Scarring of injection site (Fig. 1) was identified in 9/24 (37%) episodes or 6/17 (35%) patients. 3 of these patients (50%) were initially identified via telephone call, with clinical documentation of scarring during a subsequent hospital visit. Ankle injection scars, if present, were differentiated by the consistent site of intra-articular injections practised in our institute (*i.e*. anterior aspect of ankle joint, as opposed to sites around medial or lateral malleolus for tendon sheaths, as in this study). Out of a total of 16 tendons injected only once, 5 scarred (31%). There was no clear pattern of association with age, usage of systemic medication, steroid dose used for injection, use of lidocaine or specific tendon injected, although numbers were too small for statistical analysis. All were perceived to be efficacious by the patient and family. Importantly, no other side effects were observed. There was no alteration in nature of scarring, either documented or reported through the length of the study period covered (23 months) and subsequently to date. The main limitation of this audit is its retrospective nature.

Incidence of skin hypopigmentation or subcutaneous atrophy is approximately ≤2% in intra-articular joint injections in JIA (7). Within our institute, an earlier study of intra-articular temporomandibular injections under ultrasound guidance showed a scar rate of 0.02% (8). In studies including both intra-articular and tendon sheath injections, soft-tissue atrophy or hypopigmentation have been reported ranging from 0.1 to 4.7% (5, 9). To the best of our knowledge, this is the first report of scar rates exclusively following tendon sheath injections in children with JIA.

Triamcinolone hexacetonide (THA) is probably the most frequent steroid preparation used in children with arthritis following demonstration of its efficacy (1). Many paediatric rheumatologists probably favour the same preparation for tendon sheath injections as well. Most corticosteroid preparations (*e.g*. THA) contain esters, which are not readily water-soluble. This property renders prolonged duration of action at the target structure which is desirable (10), but, this might be at the expense of increased cutaneous complications for superficial structures such as tendon sheaths.

Our data suggests that, although potentially efficacious, tendon sheath injections might have a high incidence of scarring, which could be potentially related to THA use. Based on our findings, we would suggest using a more soluble corticosteroid preparation such as hydrocortisone to reduce the incidence of scarring when superficial structures such as tendon sheaths are injected.

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