Complications of intra- and peri-articular steroid injections

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SUMMARY

A prospective study was conducted to investigate the possible complications associated with intra- and peri-articular steroid injections. Data are presented on 1147 injections performed on 672 patients out of a total of 688 consecutive patients attending an orthopaedic outpatient setting. It was found to be a safe procedure, with a very low complication rate, if performed while taking adequate precautions. This should encourage general practitioners to offer these injections in their surgeries.

Keywords: steroids; intra-articular injection; infiltration; local anaesthetic.

Introduction

THE treatment of painful joint, tendon, and ligament conditions has been revolutionized by the introduction of intra- and peri-articular steroid injections. This treatment gives good results; however, some general practitioners (GPs) remain fearful of complications and refer their patients to the hospital.

There are few reports that document those complications directly attributable to the injection and that also include a study of the indirect effects, such as injury following syncope. This paper reviews the overall complication rate in a large number of individuals undergoing such therapy.

Method

This prospective study includes all patients who received steroid injections in the orthopaedic outpatient clinic at Harrogate District Hospital between September 1996 and April 1998. No patients were excluded and the injections were performed by all grades of staff. In all cases, the skin was prepared with either a 0.5% chlorhexidine steret and a no-touch technique was used.

The patients were divided into two groups: those receiving intra-articular injections and those with peri-articular or peri-tendinous infiltration. The steroid used was 1 ml methylprednisolone acetate (Depo-Medrone, 40 mg/ml) mixed with either 2–10 ml of 0.5% bupivicaine hydrochloride (Marcain) or 1% lignocaine hydrochloride (Lignocaine injection BP).

In all cases of peri-articular or peri-tendinous infiltration, care was taken to ensure that the injection was placed as deeply as possible and not into the subcutaneous tissues. Following the injection the site was vigorously rubbed to disperse the injected material.

Following each treatment episode, the surgeon recorded details of the patient, the diagnosis, the type of injection, and any immediate complications. The interval between injections for the same complaint was four to six weeks. All patients returning for review during the study period were re-examined.

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Submitted: 21 July 1998; final acceptance: 12 February 1999.

Results

Six hundred and eighty-eight patients entered the study. Thirty-nine failed to attend for review; however, 23 patients were contacted either by letter or telephone, leaving 16 (2.3%) patients lost to follow-up. A total of 1147 injections were administered to 672 patients in the review (382 females and 290 males). The median age was 55 years (range 16 to 95 years old). The group comprised 342 patients who received only one injection, 185 patients who received two injections, and 145 patients who received three injections.

Complications were distributed equally between the lignocaine and bupivicaine groups, which were therefore combined. The incidences of complications are summarized in Table 1. The most common complication was pain but this was not associated with any particular injection site or diagnosis. The majority of cases occurred later the same day; however, in approximately 10% of patients the discomfort was delayed by 24 to 48 hours. In all cases this was adequately controlled using simple analgesics, and no patients returned to the clinic or contacted their GP. Of the three cases of syncope, one was at the time of injection and two occurred a few minutes afterwards while queuing for a follow-up appointment. A minor closed head injury occurred in one case, which required no further treatment.

All four cases of subcutaneous lipodystrophy were in females and represented a significant cosmetic blemish. Two cases improved within six months but the remaining two cases remained unaltered.

Discussion

The literature is replete with reports of complications following intra-articular or peri-articular infiltration with steroids. These include sepsis,[1,2] skin depigmentation,[3] perilymphatic atrophy,[4] skin atrophy, and hyperpigmentation.[5] Facial flushing has been described,[2,6] as have tendon rupture [2] and bowstringing of digital flexor tendons.[2] It is perhaps not surprising, then, that a significant proportion of GPs prefer to refer their patients for this form of therapy.

This investigation makes no attempt to evaluate the success of injection therapy but has restricted itself solely to documenting any associated clinical problems. The results clearly show that complications of significance are uncommon. The instances of dizziness, syncope, haemorrhage, and local discomfort are probably not dissimilar from other injections performed in the surgery; e.g. inoculations. They are easily manageable and do not require specialized equipment or personnel. Post-injection pain, sometimes referred to as post-injection flare,[7] was easily controlled using simple analgesics.

The only complications of significance were seen at follow-up, and the most important were the four cases of subcutaneous lipoatrophy. We believe that this was because of a failure to deliver the injection sufficiently deeply, in spite of attempts to place the needle against the humeral periosteum. The authors are not aware of any technique of reducing the instance any further.

The two cases of thickening of the plantar skin following injection for plantar fasciitis were no more than an incidental

Table 1. Case distribution and complications of steroids and local anaesthetic injections.

Diagnosis	Number (%) of patients (n = 672)	Complication	Time of presentation	Number of patients
Periarticular and peritendonous injections		Injection site bleeding	Early	5
Subacromial impingement	105 (16)	Injection site pain	Early	8
Lateral epicondylitis	68 (10)	Subcutaneous lipoatrophy	Late	4
Medial epicondylitis	42 (6)	Injection site pain	Early	9
DeQuervain's and extensor tenosynovitis	58 (9)	Injection site pain	Early	3
		Injection site bleeding	Early	9
Trigger digit	33 (5)	Injection site pain	Early	6
Plantar fasciitis	30 (5)	Injection site pain	Early	4
		Skin thickening	Late	2
Trochanteric bursitis	14 (2)	Injection site bleeding	Early	4
Paraspinal trigger points	14 (2)	Injection site pain	Early	4
Intra-articular injections				
Adhesive capsulitis	101 (15)	Injection site bleeding	Early	4
Rheumatoid knee	92 (13)	Syncope	Early	2
Acromioclavicular joint arthropathy	48 (7)	Injection site pain	Early	7
Early osteoarthrosis knee	39 (6)	Temporary dizziness	Early	2
Osteoarthritis ankle	18 (3)	Injection site bleeding	Early	2
Carpal tunnel syndrome	10 (1)	Injection site pain	Early	4

finding that did not result in complaints. Both lesions softened spontaneously over a period of four to six months.

We advise that care should be taken to place the peri-articular injections as deeply as possible, so avoiding intradermal and subcutaneous injection that may be associated with subcutaneous atrophy.

We conclude that intra- and peri-articular steroid injection is a valuable technique that can be performed with confidence and safety in the surgery.

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