Does Larger Dose of Steroid Improve the Outcome of Intra-Articular Hip Injection?

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Abstract: *Introduction*: Intra-articular hip injection has been used to treat arthritic hip pain for decades. However there is no standardised recommended does and there has been variability amongst surgeons.

Objective: We aimed to determine if larger dose of steroid injected improved the duration of pain relief.

Patients and Method: We retrospectively reviewed, two matched groups of patients treated with variable doses of triamcinolone hip injection; Group A with 40mg and Group B with 80mg. The duration of pain relief after hip injection was recorded in days, weeks or months for patients in each group.

Results: In Group A, 7 patients had no pain relief at all from the hip injection, 13 for only days (less than a week), 15 patients for weeks (up to 4 weeks) and 25 patients had complete pain relief till the time of follow-up at 3 months. Similarly in group B, 6 patients had no pain relief at all from hip injection, 14 for days, 18 patients for weeks and 22 patients for 3 months. The duration of pain relief from the hip injection for both Group A (6.2weeks) and B (6.1weeks) was similar with an overall average pain relief of 6.15weeks.

Conclusion: 40mg of steroid had same duration of pain relief compared to 80mg of steroid for treating primary hip osteoarthritis.

Keywords: Hip injection, corticosteroids, osteoarthritis of hip, treatment hip pain.

INTRODUCTION

Intra-articular steroid injection is an established treatment for joint arthritis and has been advocated as a non surgical treatment for primary osteoarthritis for decades [1]. However the duration of symptomatic pain relief, as shown in most studies [2], is limited to a few weeks. We aimed to study if the duration of pain relief was improved by increasing the dose of steroids.

AIM

To determine if larger doses of corticosteroid injected into the hip joint improves the duration of pain relief

PATIENTS AND METHODS

We retrospectively compared two matched groups of patients treated with variable dose of corticosteroid (Triamcinolone acetonide - Kenalog, Bristol-Myers Squibb) hip injections; Group A had 40mg whilst Group B had 80mg. Patient's details were obtained from hospital computer database between 2004 to 2006 and each patient's notes and radiographs (x-rays) were studied individually and classified into grade I to IV (Kellgren and Lawrence classification). We included all patients with primary hip osteoarthritis and having first hip injection for temporary pain relief. Exclusion criteria included patients with hip arthritis secondary to other conditions such as rheumatoid arthritis, psoriatic arthritis, etc. and patients receiving previous hip injections. All hip injection procedures were carried out by members of the surgical team as a day case.

The procedure was carried out in operating theatres which were exclusively for only elective orthopaedic surgery with laminar flow facilities. Skin was prepared with chlorhexidine or iodine. After infiltration of the skin with local anaesthetic a long 18-G spinal needle was inserted into the joint *via* an anterior or oblique approach under fluoroscopic guidance. A hip arthrogram with non-ionic contrast medium (omnipaque 240) was performed to confirm the position of the needle tip prior to hip injection. Post procedure, all patients were discharged and reviewed in out patient department in 3 months (average 12 weeks). At the time of review patient's pain relief was recorded as in days, weeks or months.

RESULTS

There were a total of 60 patients in each group who had hip injection during this study period. Patients requiring hip injection for temporary pain relief were either waiting for total hip replacement or were not keen to proceed to arthroplasty at the time of the injection. All patients had moderate to severe osteo-arthritic changes on the Xrays (36 patients - Grade III and 84 patients - Grade IV) (Table **1**).

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Table 1: Duration of Pain Relief in Patients Injected with Variable Dose of Corticosteroids (Each Group n=60)

Details	Group A (40mg)	Group B (80mg)
Age	74.5years (71-76)	75years (72-78)
Gender	M-29;F-31	M-32;F-28
Grade of OA (Kellgren)	Grade III - 15 Grade IV - 45	Grade III – 21 Grade IV 39
Duration of Pain Relief		
Months (1 – 3 months)	25 (42%)	22 (37%)
Weeks (1 – 4 weeks)	15 (25%)	18 (30%)
Days (1 – 7 days)	13 (22%)	14 (23%)
No pain relief	7 (11%)	6 (10%)
Average duration of pain relief	6.2weeks	6.1weeks

In group A, at the time of review in the clinic, 7 patients had no pain relief at all from the hip injection, 13 patients had recorded to have pain relief for only days (less than a week), 15 patients had pain relief for weeks (up to 4 weeks) and 25 patients had complete pain relief till the time of follow-up at 3 months (Table **1**).

Similarly in group B, 6 patients had no pain relief at all from hip injection, 14 patients had pain relief for days, 18 patients for weeks and 22 patients for 3 months (Table **1**). The average pain relief from the hip injection was 6.2 weeks for Group A and 6.1weeks for Group B with an overall average of 6.15weeks.

Duration of pain relief was not influenced by the dose of steroids or grade of OA.

DISCUSSION

Hollander *et al.* was the first to suggest the benefit of intra-articular steroids as a treatment of joint arthritis and later studies, using larger molecules such as triamcinolone, showed that the drug was contained within the joint space for a longer period with only minimal systemic effect for even higher doses of steroids [3]. The current recommended dose of intra-articular triamcinolone (Kenalog) for any major joints such as the hip or knee is between 20 to 40mg with a maximum dose of 80mg [4]. Although there are variable practices among clinician regarding the dose of steroid injected, to our knowledge there have been no studies that have so far shown if steroids dose influence the duration of pain relief. Some studies have suggested repeated steroid injections prolongs the duration of pain relief but this has however not been shown in hip osteoarthritis [5].

It may be argued that primary osteoarthritis is not an inflammatory disease and hence not amenable to steroid treatment but majority of our patients (Group A 89%; Group B 90%) benefited from some amount of pain relief from the hip injection (Table **1**). Steroids control the inflammation secondary to calcium crystals and cartilage macromolecules and hence patients benefit from pain relief especially during joint flare ups [6]. 42% in Group A patients and 37% in Group B patients had pain relief lasting for more than 4 weeks (Table **1**). The anti inflammatory action of steroids is maximal at the first 24-48hours and patients benefiting pain relief lasting for more than a week must be explained by other mechanisms. Arthritic joints have a lower viscosity compared to normal joints. Some studies have shown that there was improvement in pain relief by injection of viscosupplement (sodium hyluronate) into arthritic joint with equal benefit compared to steroid injections [7]. This may suggest that steroids may also have a viscosupplement property which may account for the longer duration of pain relief in some patients. There is also evidence to suggest that steroids stimulates the production of lubricating surfactant by the cartilage which may both improve the hydration of the cartilage and help with long term pain relief [8].

The outcome of hip injections is variable, as shown in other joints, 11% in Group A patients and 10% in Group B patients did not have any benefit from hip injections whilst the rest of the patients had some pain relief from the injection (Table **1**). It has now been increasingly recognised that the osteoarthritic disorders are a heterogeneous group of conditions, and it is likely that patients with more inflammatory type of joint involvement generally respond more favourably to intra

articular steroids than do those with dry, grating type of involvement [2].

This study has its limits of any retrospective review. There may be an area of selection bias as it was not a randomised controlled study. Patients were recruited from various consultants who may have had different thresholds for hip joint injections. However this study has highlighted that there was no additional benefit with larger dose of corticosteroid hip injections i.e. 80mg of steroids dose did not improve the duration of pain relief compared to 40mg dose. Patients in Group A and B had similar duration of pain relief (Table **1**). Though hip injections are relatively safe with a very low complication rate, repeated injections and increased steroid dose have shown to cause joint arthropathy [9]. More ever, there has been some concerns raised recently that the use of intra-articular corticosteroids may remain as precipitant in the joint which can predispose to the development of infection with subsequent joint replacement arthroplasty [10]. Although at the time of follow up none of our patients had any complications secondary to hip injections, larger doses of steroids have a potential risk. Hip injections have now been recommended for the management of hip osteoarthritis, however there are no guideline regarding the dose or the time interval required between injections [11]. From this study we conclude that a moderate dose of 40mg corticosteroids will be sufficient for temporary pain relief of hip osteoarthritis there is no additional benefit using higher doses of steroids.

CONCLUSION

There is no difference in the duration of pain relief between the use of 40 and 80 mg of triamcinolone in hip injection for primary osteoarthritis. There is reliable pain relief after hip joint injection but the duration of pain relief is short term.

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