DOI: https://doi.org/10.53350/pjmhs22163344

ORIGINAL ARTICLE

Frequency of Destructive Hip Disease Post Intra-Articular Corticosteroid Hip Injection

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ABSTRACT

Objective: To find the frequency of destructive hip disease in post intra-articular corticosteroid hip Injection.
Study Design: Retrospective study
Place and Duration of Study: Department of Orthopaedic, Sahara Medical College Narowal from 1st January 2021 to 31st December 2021.
Methodology: One hundred and twenty cases of corticosteroid injection in intra-articular region were analyzed. The radiological imaging within 6-12 months was used for finding frequency of rapidly destructive arthrosis. Narrowing of joint space greater than fifty percent with a loss of cartilage up to 2mm within a year was used for rapidly destructive arthrosis diagnosis. Kallgren and Lawrence scoring system ranged between 0-4 was used.
Results: There were 73.3% and 26.7% males and mean was 53.1±3.3 years. The steroidal injection was placed as 40mg triamcinolone-acetonide with 4 mL 1% lidocaine in 77.5% of cases. 20.8% rapidly destructive arthrosis in all the patients who were injected with corticosteroid. The progression of total hip arthroplasty was noticeable in 22.5%.
Conclusion: A high frequency of destructive hip disease is observed in intra-articular corticosteroid hip injections.
Keywords: Frequency, Destructive hip disease, Intra-articular corticosteroid hip injection

INTRODUCTION

Destructive hip disease as osteoarthritis is a rare complicated condition. The occurrence of rapid destructive arthritis is not completely understood and has awareness knowledge since 1957.[1] There has been many literature reported on similar condition since after.[2] The most appropriate definition was narrated by Lequense which stated that narrowing of joint space greater than fifty percent with a loss of cartilage up to 2mm within a year in addition to no identification of any forms of the destructive-arthropathy.[3]

Rapidly destructive arthrosis (RDA) has been classically identified in old age women having radiological evidence of osteoarthritis such as Kallgren and Lawrence (KL).[4] A tendency of unilateral involvement with a higher score at earlier presentation has been noticed in these women.[5,6] The incidence of RDA has been reported as 16%.[7] The factor which results in the RDA includes osteopenia or osteoarthritis[8,9], in addition to inverted acetabulum labrum[10,11] or increase in the posterior-pelvic tilt.[12]

The other factors as deposition of pyrophosphate or of the hydroxylapatite in the intra-articular area as well as steroidal injection in the intra-articular region are associated with RDA.[13] RDA causes severe destruction in the femoral head in addition to the acetabulum as noticed through the radiological imaging. A longer time for operation as well as requirement of implant becomes urgent in such cases where RDA has caused deVere destruction. The present study was designed for evaluating the frequency of intra-articular steroid injection as a factor of causing RDA. There are evidence-based studies however with incomplete information in this context.

MATERIALS AND METHODS

The retrospective trial was conducted at Department of Orthopaedic, Sahara Medical College Narowal from 1st January 2021 to 31st December 2021. A total of 120 hips post their written permission for being a part of this study. The classification of RDA was based on the radiological imaging monitoring after being injected with a corticosteroid in the intra-acetabular region. The radiological image was conducted at 6 months and then at 12 months for identifying RDA presence. The patients who were diagnosed with post traumatic osteoarthritis, or inflammatory arthritis, previous hip surgery or osteonecrosis were excluded from the study. The corticosteroid injection contained steroidal mixture and was injected in the femoroacetabular-joint under the guidance of fluoroscopy. The RDA hip confirmation was made by observing the cartilage progressive loss >2mm and or with 50% narrowing of the joint space. The time since first injection and RDA was considered as primary outcome and total hip arthroplasty (THA) was considered as a secondary outcome. The KL scoring was ranged between 0-4 with higher scoring indicating higher severity. Joint space measurement was conducted at the narrowest facet of weight bearing dome. The demographic information, BMI and other clinical history was documented on a well structure proforma. Statistical analysis was performed through SPSS 26.0 using odd ratio analysis and IQR.

RESULTS

There were 32 (26.7%) males and 88 (73.3%) females and mean age was 53.1±3.3 years. An extra injection doses were given to 18 cases. A high BMI value greater than 30 indicating obesity was noticeable in 21 cases. The mean age of the study participants was (Table 1).

The steroidal injection was placed as 40mg triamcinolone-acetonide with 4 mL 1% Lidocaine in 77.5% of cases while as 40mg triamcinolone-acetonide with 4 mL 0.25% bupivacaine in 18.3% cases. Only 4.1% cases had 40 mg triamcinolone acetonide (Table 2).

The current study showed a frequency of 20.8% RDA in all the patients who were injected with corticosteroid. The progression of total hip arthroplasty was noticeable in 22.5% those patients with RDA while in 37 such as 30.8% without RDA. The interquartile rage showed 10.2 months for THA progression in RDA cases (Table 3).

Table 1: Gender and clinical characteristics of the patients

Variable	No.	%
Gender		
Male	32	26.7
Female	88	73.3
Age (years)	53.1±3.3	
Extra injections	18	15.0
LCEA	10	8.4
BMI >30	21	17.5

There was no association seen of gender with RDA through odd ratio analysis. There was also no relation observed within

occurrence of RDA and more than a single injection in similar joint. Patients with higher KL score with 95% confidence interval had higher odds ratio (Table 4).

Table 2: Sequence of injection in enrolled patients

Steroidal Injections	Injections (n=27)	Total injections (%)
40mg triamcinolone-acetonide with 4 mL 1% Lidocaine	93	77.5
40mg triamcinolone-acetonide with 4 mL 0.25% bupivacaine	22	18.3
40mg triamcinolone-acetonide with 2 mL 0.25% bupivacaine	5	4.1

Table 3: Rapidly destructive arthrosis diagnosis of enrolled patients

	RDA	No RDA
Patient diagnoses	25 (20.8%)	95 (79.1%)
Progression to THA	27 (22.5%)	37 (30.8%)
Median time to THA	10.2 months (IQR: 6.4-11.3)	24.8 months (IQR: 15.4-65.2)

Table 4: Comparison of adjusted and non adjusted clinical characteristics in enrolled patients

RDA diagnosis	Comparison	Unadjusted		Adjusted	
		OR (95% CI)	P	OR (95% CI)	P
Gender	Male – Female	2.13 (0.81-5.64)	.132	2.63 (0.86-8.23)	.094
Extra injection	Yes – No	1.31 (0.38-4.49)	.681	-	-
KL score	(1 unit upsurge)	1.59 (1.02-2.44)	.041	1.76 (1.05-2.94)	.037
LCEA	(1 unit upsurge)	0.99 (0.93-1.04)	.351	-	-
BMI	(1 unit upsurge))	0.98 (0.92-1.04)	.549	-	-

DISCUSSION

Rapidly destructive arthrosis is not completely understood condition which results in a rapid hip destruction. It leads to severe pain and functional decline which further results in total hip arthroplasty. The condition is usually diagnosed within a year when no other forms of destructive-arthropathy are identifiable.[14] In majority of the females it is a unilateral condition which can be observable at elderly age as also observed in the current research.[15]

The management options are limited and require proper awareness of the factors which might lead into into formation.[16-18] The results of this study found RDA formation in 20.8% patients which is relatable to the previous research data from 2018 by Hess et al which reported 21% of enrolled cases of having RDA post steroidal intra-articular hip injections.[19] The similar study also presented same results as of the current research where older patients had higher KL score.

Patients with RDA of hip have twenty time greater odds of developing THA than those without RDA. This is because of the reason that the process of arthritis significantly progresses in cases of RDA. The median time of RDA was also limited in cases of RDA of hip for developing THA than those without RDA.[19-21]

CONCLUSION

A high frequency of destructive hip disease is observed in intra-articular corticosteroid hip injections with 20.8% at a risk within total population undergoing these injections.

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