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DEXMEDETOMIDINE AS AN ADJUNCT TO TRIAMCINOLONE IN TRANSFORAMINAL INJECTION FOR RADICULAR LOW BACK PAIN: A RANDOMIZED CONTROLLED STUDY

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ABSTRACT **Background:** Transforaminal steroid injections show variable efficacy with delayed onset, occasional post procedure pain due to steroid flare, and plasma glucose fluctuations. **Aim:** This study evaluated the outcome of adding Dexmedetomidine to transforaminal Triamcinolone on onset, intensity of pain relief, frequency of rescue analgesic intake, quality of life, fasting blood sugar, hemodynamic and level of sedation. **Methodology:** Thirty-eight patients with lumbar disc herniation were randomly allocated into two groups for transforaminal epidural injection (n=19): Group One received Triamcinolone 40mg, and Group Two received Triamcinolone 40mg with Dexmedetomidine 0.5mcg/kg. Both groups were monitored for changes in hemodynamic parameters, level of sedation using Ramsay Sedation Score, and fasting blood sugar for up to 4 hours and later followed up for six months evaluating pain using visual analogue score (VAS), quality of life using Oswestry Disability Index, and frequency of paracetamol intake as rescue analgesic. **Result:** Data analysed for thirty-six participants (n=18) showed patients in Group Two reported over 90% reduction in VAS over 6 months within one hour of drug administration ($p<0.001$) with a significantly lower frequency of paracetamol intake in the first two weeks ($p=0.01$). There was no statistical difference in Oswestry disability scores between the groups. The impact on fasting blood sugar, heart rate, blood pressure and level of sedation was not clinically significant. **Conclusion:** Dexmedetomidine not only offers superior pain relief for six months but also bridges the delay in time of onset by Triamcinolone. It facilitates quick rehabilitation and less reliance on oral rescue analgesics.

KEYWORDS : Dexmedetomidine, Triamcinolone, Transforaminal Epidural Injections, Radicular Pain

INTRODUCTION

Back pain is a common reason for primary and emergency care consultations with 90% of cases comprising mechanical or non-specific back pain. [1] However, identifying red flag signs and further imaging is crucial. In patients being investigated for low back pain with focal neurological deficit, Magnetic Resonance Imaging (MRI) often reveals lumbar intervertebral disc herniation causing mechanical compression with associated nerve root inflammation. This in turn, results in radiculopathy - a clinical symptom complex of sharp lancinating pain, weakness, or numbness in a myotome or dermatomal distribution. [2]

The aim of treating chronic lumbar radiculopathy is to alleviate pain and facilitate early rehabilitation. Minimally invasive options like transforaminal steroid injections are more cost-effective than surgery, performed in less time, reduce the need for oral rescue analgesics, speedy recovery and cause fewer complications. [3] However, the efficacy of steroid alone is controversial. Depending on severity of the pathology, it offers short-term pain relief, ranging between 8 days to 3 months. There are reports of steroid flare, or nerve irritation leading to pain and discomfort within 48 hours after introduction of drug solution into the epidural compartment. [4] This can affect the patient's overall satisfaction with the procedure. Further, current research aims for an alternative way to reduce steroid doses whilst offering good pain relief for patients with glucose metabolism issues.

To address the problem statement, the primary objective of our study was to evaluate the role of adding Dexmedetomidine as an adjunct to Triamcinolone in transforaminal injection for lumbar radicular pain and compare the intensity of pain relief with the group receiving Triamcinolone alone. The secondary objectives were to compare the two groups in terms of onset of pain relief, frequency of paracetamol intake as rescue analgesic, quality of life using the Oswestry Disability Index (ODI), effect on fasting blood sugar, heart rate, blood pressure and level of sedation.

METHODOLOGY

This randomized prospective double-blind controlled study was conducted from April 2023 to April 2024 in a government medical college after approval from Institutional Scientific Committee and Ethics Committee and registration under Clinical Trial Registry-India (CTRI /2023/04/051360). A total of forty participants were screened and eventually thirty- eight participants between the age group of 40-60 years were enrolled. These patients satisfied the inclusion criteria of having lumbar radiculopathy secondary to intervertebral disc herniation at one or two segmental levels not responding to more than 4 weeks of conservative treatment. The exclusion criteria included patient refusal, lumbar disc extrusion with neurological deficit, vertebral deformities, previous spine surgery, allergy to study drug, steroid intake for chronic diseases, obesity>30kg/m2, malignancy, local site infection, coagulation abnormalities, severe psychiatric disorder and history of substance abuse.

The sample size was calculated based on a study by Imani F et al., [5] "Comparison of Transforaminal Triamcinolone and Dexmedetomidine in Radicular Low-Back Pain: A Randomized Double-Blind Clinical Trial" with 95% confidence interval (Z score=1.96) considering VAS at one month (4.5±1.7 for Triamcinolone and 3.0±1.5 for Dexmedetomidine).

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})(\sigma_1^2 + \sigma_1^2)}{r(M_1 - M_2)^2}$$

The sample size was derived as thirty- six (n=18), at 95% confidence interval and power of 80%. After adding 10% to consider drop outs, forty (n=20) participants were screened for each group by the investigator.

All the participants were blinded to the study drugs and randomly allocated into either group, based on chit method. These chits were numbered by a junior resident. Those with odd numbers in the chit were allocated into Group One and received transforaminal Triamcinolone 40mg and those with even numbers went to Group Two and received transforaminal Triamcinolone 40mg with Dexmedetomidine 0.5mcg/kg adjusted to a volume of 4mL per segment involved. A brief history including the age, sex, BMI, occupation, site, side, severity of pain using VAS, duration of pain and disability using the Oswestry Disability questionnaire were noted by the investigator. MRI imaging for level of disc herniation, complete blood count, creatinine and fasting blood sugar reports were reviewed.

The following day, on arrival to the operation theatre (OT), the patient was made to lie in supine position on a C-arm compatible table and appropriate ASA standard monitors were attached. The baseline heart rate (HR), blood pressure (B.P), oxygen saturation (SpO2) and electrocardiogram (ECG) were recorded, written consent was reviewed and intravenous line was secured. The patient was then positioned prone on the C-arm compatible OT table and area of nerve

block was prepared and draped. The oblique view Scotty Dog landmark was used for sub-pedicular approach to the safe triangle after squaring of the target vertebrae on fluoroscopic anteroposterior view. The exiting nerve roots and retrograde spread of dye into the epidural space were confirmed to ensure correct needle position [Figure 1]. This was followed by administration of the drug, prepared by the junior resident as per the group allotted at the time of allocation and assignment. The doctor performing the procedure was blinded to both the group and drug combination allotted in the respective group. All patients were then monitored in the high dependency unit (HDU) by the investigator for 4 hours and discharged under supervision of a responsible guardian. Prior to discharge, they were counselled regarding maintaining daily records of pain with activities and frequency of oral paracetamol 1g intake as a rescue analgesic. They were advised oral pregabalin before bed time for 2 weeks and measures for correcting poor posture, work place ergonomics, and physical rehabilitation to prevent further injuries.

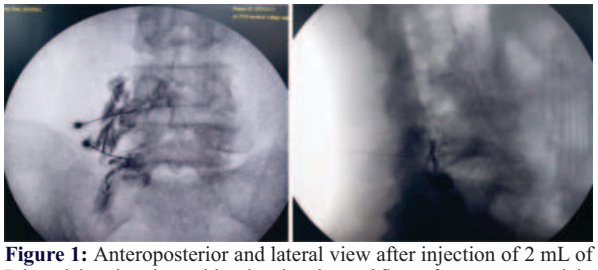

Figure 1: Anteroposterior and lateral view after injection of 2 mL of Iohexol dye showing epidural and perineural flow of contrast material.

Monitoring and Outcome Assessment

The VAS was used to measure and record the severity of lumbar radicular pain at baseline 1hour 4hours 2 weeks 1 month3 months 6 months after procedure. The rating of 0 was considered as no pain, 1-3 mild pain, 4-6 moderate pain, 7-9 severe pain and 10 worst imaginable pain. The mean VAS score readings were used to measure and compare outcomes of the study such as intensity of pain relief and onset of pain relief.

The intensity of pain relief was expressed as a percentage reduction in average VAS score over follow ups compared to baseline. The intensity of pain relief was then categorized: as inadequate (when less than 50% reduction), adequate (when 50-80% reduction) and excellent (when greater than 80% reduction).

The time of onset of pain relief was defined as the time from the administration of the block until a 50% reduction in VAS score or VAS<3, whichever was earlier. The onset of pain relief was then categorized as: within 1 hour, within 4 hours, within 2 weeks, or within 1 month from the time of procedure.

The Oswestry Disability Index (ODI), a patient-completed questionnaire was used to assess quality of life based on the level of disability in 10 activities of daily living including pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social life, travelling and home-making. Each aspect was examined with 6 statements and scored from 0 (least disability) to 50 (greatest disability). The score between 0-4 indicated no disability, 5-14: mild disability, 15-24: moderate disability, 25-34: severe disability and 35-50 suggested completely disabled or bed bound state. The ODI scores were recorded at baseline, 2 weeks, 1 month, 3 months and 6 months after the procedure and compared between the groups.

The level of sedation was assessed by Ramsay Sedation Scale prior to procedure and at baseline, 15 min, 30 min, 60 min, 90 min and 240 mins after the procedure. A score between 1 to 3 indicated an awake state, where as scores between 4 and 6 indicated excessive sedation. The HR, BP and spO2 same intervals. The fasting blood sugar was recorded using a glucometer before the procedure and 4 hours after the procedure.

Statistical Analysis

Data was collected on an Excel spreadsheet and exported to Statistical Package of Social Science software (SPSS Version 20.0) for statistical analysis. The descriptive analyses of categorical variables were reported as frequencies and percentages (%), whereas those of continuous variables were reported as mean ± standard deviation (SD). The association of the quantitative variables was analysed using the independent t-test, whereas the association of the qualitative variables was analysed using the Chi-Square test. If any cell had an expected value of less than 5, then Fisher's exact test was used. p-value < 0.05 was considered significant.

RESULTS

Out of 40 participants screened, 38 participants were enrolled, randomized and allocated into two groups and eventually the data of 36 was analysed. Two patients were excluded before randomization, one patient was withdrawn in the middle of the study and another that ended in failure to follow up [Figure 2]

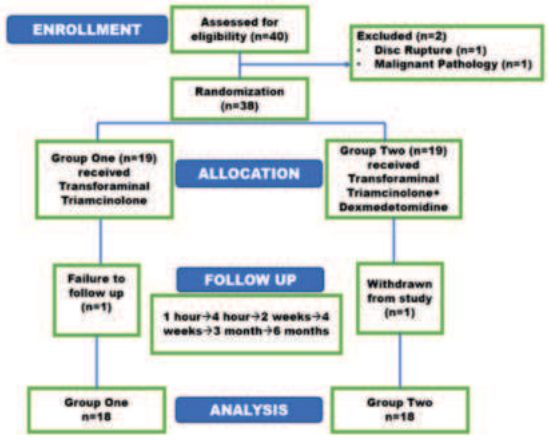

Figure 2: Consort Diagram

The demographic profile of patients and the number of cases based on clinical characteristics were comparable. [Table I]

Table I Comparison of demographic variables and patient distribution based on clinical characteristics at presentation

VARIABLES	GROUP ONE (N=18)	GROUP TWO (N=18)	P VALUE
AGE IN YEARS (± SD)	45.61 ± 7.70	42.94 ± 9.14	0.351*
SEX			0.318**
• MALE (%)	7 (39%)	11 (61%)	
• FEMALE (%)	11 (61%)	7 (39%)	
OCCUPATION (%)			0.719**
• HOMEMAKER	11 (61%)	8 (44%)	
• MANUAL LABOURER	3 (17%)	2 (11%)	
• DESK JOB	2 (11%)	3 (17%)	
• DRIVER	1 (6%)	1 (6%)	
• SECURITY GUARD	1 (6%)	3 (17%)	
• GYM INSTRUCTOR	0 (0%)	1 (6%)	
MEAN BMI KG/M2 (±SD)	24.98 ± 2.62	25.00 ± 2.62	0.977*
LEVEL OF DISC HERNIATION			0.590**
• L3-L4	1 (6%)	0 (0%)	
• L4-L5	9 (50%)	10 (56%)	
• L5-S1	4 (22%)	4 (22%)	
• L3-L4, L4-L5	1 (6%)	0 (0%)	
• L3-L4, L5-S1	1 (6%)	0 (0%)	
• L4-L5, L5-S1	2 (11%)	4 (22%)	
DURATION OF SYMPTOMS			0.310**
• LESS THAN 3 MONTHS	6 (33%)	9 (50%)	
• MORE THAN 3 MONTHS	12 (67%)	9 (50%)	
SEVERITY OF LOW BACK PAIN (VAS SCORE)			0.592**
• MODERATE PAIN (3-6)	6 (33%)	9 (50%)	
• SEVERE PAIN (7-9)	9 (50%)	7 (39%)	
• WORST IMAGINABLE PAIN (10)	3 (17%)	2 (11%)	

SEVERITY OF DISABILITY (% ODI) • MILD DISABILITY (0-20%) • MODERATE DISABILITY (20-40%) • SEVERE DISABILITY (40-60%)	 13 (72%) 4 (22%) 1 (6%)	 14 (78%) 4 (22%) 0 (0%)	0.595**
*STUDENT T-TEST, **CHI-SQUARE TEST, SD-STANDARD DEVIATION, BMI-BODY MASS INDEX, VAS-VISUAL ANALOGUE SCALE, ODI- OSWESTRY DISABILITY INDEX, GROUP ONE- TRANSFORAMINAL TRIAMCINOLONE, GROUP TWO- TRANSFORAMINAL TRIAMCINOLONE AND DEXMEDETOMIDINE			

The percentage improvement in VAS scores after transforaminal block in Group Two and Group one was 90% and 68%, respectively. [Table II] The average VAS scores over follow ups showed significantly lower scores in Group Two compared to Group One (p<0.001, 95% CI:1.00-2.39) [Table II]. The majority of participants in Group Two [15 (83%)] experienced excellent pain relief while the majority in Group One [14 (78%)] reported adequate pain relief.

Table II: Comparison of intensity of overall pain relief at the end of 6 months

VARIABLES	GROUP ONE N=18	GROUP TWO N=18	P VALUE
VAS BASELINE	7.50	7.06	0.357*
MEAN VAS SCORE OVER FOLLOW UPS	2.39	0.69	<0.001*
Δ VAS	5.11	6.37	
Δ VAS/VAS BASELINE	0.68	0.90	
INTENSITY OF PAIN RELIEF ΔVAS %	68%	90%	
CATEGORY OF PAIN RELIEF	Adequate	Excellent	
GROUP ONE- TRANSFORAMINAL TRIAMCINOLONE, GROUP TWO- TRANSFORAMINAL TRIAMCINOLONE AND DEXMEDETOMIDINE, VAS-VISUAL ANALOGUE SCALE, *STUDENT'S T- TEST, P<0.05 (SIGNIFICANT)			

In Group Two, the time to onset of pain relief was within 1 hour in 72% (13) patients and latest by 4 hours in the remaining 28% (5) patients. [Figure 3]. The difference in VAS score at 1 hour and 4 hours between the study groups was statistically highly significant (p<0.001, 95% CI:1.30-4.13). [Table III and Graph 1]

The frequency of paracetamol intake as rescue analgesic was significantly lower in Group Two (5.28±2.21 times versus 3.56±2.14 times) in first 2 weeks after the procedure. (p<0.024, 95% CI:0.24-3.20). In terms of quality of life based on Oswestry Disability Scores, both groups were comparable with no significant difference. [Table III]

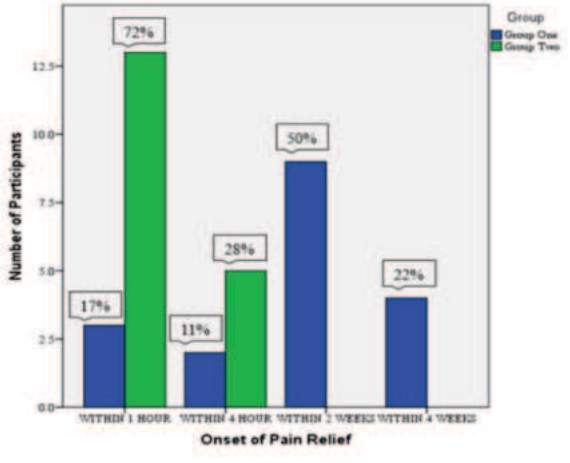

Figure 3: Comparison of number of participants and the time of onset of pain relief

Table III: Comparison of VAS score, Frequency of Paracetamol Intake and Oswestry Disability Score at follow up intervals over 6 months

VARIABLES	GROUP ONE (N=18)	GROUP TWO (N=18)	P VALUE
Vas SCORES (MEAN ± SD) BEFORE INTERVENTION POST INTERVENTION	7.50 ± 1.43	7.06 ± 1.43	0.357
1 HOUR	4.39 ± 1.88	1.67 ± 2.28	<0.001
4 HOURS	4.22 ± 2.21	0.89 ± 1.18	<0.001
2 WEEKS	1.44 ± 1.72	0.39 ± 1.24	0.040
4 WEEKS	0.50 ± 1.54	0.17 ± 0.70	0.411
12 WEEKS	1.11 ± 1.94	0.39 ± 1.15	0.182
24 WEEKS	2.72 ± 2.08	0.67 ± 1.28	0.001
FREQUENCY OF PARACETAMOL INTAKE (MEAN ± SD) POST INTERVENTION			
0-2 WEEKS	5.28 ± 2.22	3.56 ± 2.15	0.024
2-4 WEEKS	1.89 ± 3.64	1.22 ± 2.32	0.517
4-12 WEEKS	1.00 ± 1.53	0.28 ± 0.83	0.088
12-24 WEEKS	1.61 ± 2.00	0.56 ± 1.38	0.075
OSWESTRY DISABILITY SCORES (MEAN ± SD) BEFORE INTERVENTION POST INTERVENTION	17.78 ± 10.09	15.61 ± 9.08	0.503
2 WEEKS	5.56 ± 7.73	2.39 ± 4.02	0.132
4 WEEKS	5.67 ± 9.91	2.28 ± 3.99	0.187
12 WEEKS	5.72 ± 9.84	2.33 ± 3.99	0.185
24 WEEKS	6.56 ± 10.20	2.56 ± 4.36	0.135
*STUDENT T-TEST, SD-STANDARD DEVIATION, GROUP ONE- TRANSFORAMINAL TRIAMCINOLONE, GROUP TWO- TRANSFORAMINAL TRIAMCINOLONE AND DEXMEDETOMIDINE			

There was no significant difference between the fasting blood sugar between the groups before and after 4 hours of the procedure. (p=0.08) and in the observed Ramsay Sedation Scores. The heart rate at 15 (p-0.002), 30 (p-0.001), 60 (p-0.001), 90 (p-0.005) and 240 min (p-0.013) were significantly lower in Group Two compared to Group One. The diastolic blood pressure at 15 mins(p<0.024) and 30 mins(p<0.043) was significantly lower in Group Two, although within normal physiological range. [Table IV]

The incidence of paraesthesia was double in Group One than that experienced by participants in Group Two. There was a single inadvertent intrathecal injection in Group Two. [Table V]

Table IV: Comparison of systemic effects of drug on heart rate, blood pressure and Ramsay Sedation Score and fasting blood sugar

VARIABLES	GROUP ONE (N=18)	GROUP TWO (N=18)	P VALUE
HEART RATE (BEATS/MIN)			
0 MINS	79.06 ± 7.66	77.94± 9.79	0.707
15 MINS	84.22 ± 6.53	74.94± 9.83	0.002
30 MINS	80.22 ± 7.04	71.22± 7.5	0.001
60 MINS	78.56 ± 6.36	70.44±7.6	0.001
90 MINS	78.17 ± 5.71	71.11± 8.25	0.005
240 MINS	76.94 ± 4.58	71.56± 7.37	0.013
SYSTOLIC BLOOD PRESSURE (MM OF HG)			
0 MINS	118.33 ± 11.07	117.22± 8.68	0.379
15 MINS	118.44 ± 8.77	113.00 ±11.75	0.423
30 MINS	118.78 ± 8.18	113.67 ±11.05	0.492
60 MINS	117.89 ± 8.01	113.11± 10.04	0.124
90 MINS	117.44 ± 7.85	114.11 ± 7.72	0.821
240 MINS	117.56 ± 7.53	113.78± 7.57	0.732
DIASTOLIC BLOOD PRESSURE (MM OF HG)			
0 MINS	80.00 ± 7.88	77.33 ± 8.28	0.330
15 MINS	79.11 ± 6.55	73.78 ± 6.99	0.024
30 MINS	78.67 ± 7.82	73.00 ± 8.38	0.043
60 MINS	77.78 ± 7.19	73.78 ± 8.70	0.142
90 MINS	78.78 ± 7.74	74.67 ± 7.42	0.113
240 MINS	76.44 ± 6.23	73.44 ± 7.48	0.200

RAMSAY SEDATION SCORE			
0 MINS	1.72 ± 0.46	1.78± 0.43	0.71
15 MINS	1.89 ± 0.32	1.89± 0.32	1.00
30 MINS	1.89 ± 0.32	1.94± 0.24	0.56
60 MINS	1.89 ± 0.32	1.94±0.24	0.56
90 MINS	1.89 ± 0.32	2.00± 0.00	0.154
240 MINS	2.00 ± 0.00	2.00± 0.00	1.00
FASTING BLOOD SUGAR (MG/DL) 4 HOURS	125.50 ±12.40	132.72 ± 20.20	0.205
GROUP ONE- TRANSFORAMINAL TRIAMCINOLONE, GROUP TWO- TRANSFORAMINAL TRIAMCINOLONE AND DEXMEDETOMIDINE, MM OF HG-MILLIMETRES OF MERCURY, MINS- MINUTES, SD-STANDARD DEVIATION, *STUDENT'S T- TEST, P<0.05 (SIGNIFICANT)			

Table V: Incidence of complications related to drugs and procedure

Incidence Of Complications Related to Drugs and Procedure		
Observed	Group One	Group Two
Symptomatic bradycardia	0	0
Hypotension	0	0
Excessive sedation	0	0
Paraesthesia	6	3
Inadvertent intrathecal injection	0	1
Inadvertent vascular injection	0	0
Meningitis	0	0
Epidural abscess	0	0
Post dural puncture headache	0	0

DISCUSSION

The main goal in the treatment of chronic low back ache and radiculopathy is to relieve pain at the earliest. The addition of an adjunct could overcome the limitations of transforaminal steroid injection and augment the overall efficacy of treatment. The reduction in the intensity of pain six- months after the procedure was 90% with the addition of Dexmedetomidine as compared to 68% when steroid was administered alone. The association of the superior quality of pain relief with the administration of Dexmedetomidine was both statistically significant and found to be consistently effective across the majority (83% in Group Two versus 17% in Group One) of patients ($p<0.001$). The high efficacy of transforaminal epidural steroid injections may be explained by the precise delivery of the steroid solution, nerve membrane–stabilizing properties of steroid and dexmedetomidine, the "washout" effect of the solution (decreases the regional levels of inflammatory mediators such as interleukin-1, tumor necrosis factor and phospholipase A2) and the potentiation of the anti-inflammatory properties of steroid by Dexmedetomidine. [6] These findings are consistent with the results of other studies using Dexmedetomidine in the treatment of chronic back pain syndromes. [5,7-9]. Interestingly, both groups showed considerable clinical improvement in activities of daily living within 2 weeks but with no statistical difference in terms of the quality of life. Similar findings were noted in the study by Imani F. [5]

In addressing other concerns related to TFESI, the initial discomfort associated with steroid flare is usually managed with NSAIDS and acetaminophen. In our study, as a secondary outcome, it was observed that the onset of pain relief was within 1 hour in 72% of participants and latest within 4 hours in the remaining 28% with the addition of Dexmedetomidine to Triamcinolone. The group receiving Triamcinolone alone showed a statistically significant delayed onset between 2 weeks to almost a month. The frequency of paracetamol intake as a rescue analgesic in the first two weeks was also significantly lower in the group receiving Dexmedetomidine ($p=0.024$). The quick onset and lower requirement for rescue analgesic could be explained by the proximity of drug deposition near the nerve root, high lipophilic nature of the drug which quickly absorbs into the CSF, and activation of alpha receptors in the dorsal horn to inhibit pain transmission at the spinal level. These findings are in line with previous studies that have evaluated the analgesic efficacy of Dexmedetomidine when administered in the epidural space. [10-12]

The systemic effects of the drugs were studied in terms of impact on fasting blood sugar, level of sedation and hemodynamic parameters. Triamcinolone is known to transiently raise blood sugar due to decreased insulin sensitivity and this fluctuation maybe harmful to diabetics. In our study, we excluded diabetics and yet the mean fasting blood sugar prior to intervention was incidentally found to be in the range of prediabetic or impaired glucose tolerance. The data was moreover not comparable probably owing to confounders such as stress prior to procedure, decreased physical activity or non-compliance to fasting instructions. The mean fasting blood sugar at 4 hours post procedure showed an increase from baseline in both the groups with no significant difference in the group receiving Dexmedetomidine. This is unlike the findings in study by Imani F that demonstrated a decrease in blood sugar in the group receiving transforaminal Dexmedetomidine alone. [5]

The sedative effects of Dexmedetomidine are mediated by its binding to presynaptic alpha 2 adrenoreceptors in the locus coeruleus, thereby inhibiting the release of norepinephrine, which mediates arousal and alertness. The lack of sedative effects from dexmedetomidine in the context of a transforaminal block in our study could be attributed to the localised nature of this injection, and small volume administered confined to a specific nerve root level. This is as opposed to a larger volume of drug given in epidural, diffusing into the CSF to reach the brainstem leading to more pronounced sedation as seen in studies like Bajwa and Jain et al. [13-14] We concluded that the quick onset of pain relief with awake but tranquil state after the block with Dexmedetomidine as an adjunct was desirable both for patient comfort as well as decisions regarding day care and discharge.

Dexmedetomidine as an alpha 2 adrenergic agonist acts on presynaptic receptors of the spinal cord and inhibits the release of norepinephrine. Norepinephrine increases heart rate and blood pressure by stimulating beta adrenergic receptors of the heart and blood vessels. This inhibition of norepinephrine, or sympatholytic action, leads to predominance of the vagal tone on the heart leading to decrease in heart rate and blood pressure. [15] The heart rate from 15 mins onwards to 240 mins after the procedure and diastolic readings at 15 and 30 mins was found to be significantly lower in the group receiving Dexmedetomidine. Although, from a clinical standpoint, it was physiological necessitating no intervention.

The most common side effect of the procedure was found to be an abnormal tingling sensation in the legs which was transient and subsided with reassurance and physiotherapy. There was a single inadvertent intrathecal administration despite negative CSF flow in the group receiving Dexmedetomidine which led to dense motor block, bradycardia and hypotension. It was immediately corrected with fluid bolus, injection Mephentermine 12mg and injection atropine 0.6 mg. This candidate was withdrawn from the study.

CONCLUSION

It was concluded that Dexmedetomidine was a safe and compatible adjunct that could provide significant reduction in pain intensity up to six months, with early onset of action bridging the delay and discomfort with steroid, while reducing the overall need for paracetamol as rescue analgesic and improving the quality of life, with no clinically significant impact on fasting blood sugar, hemodynamics or level of sedation.

Limitations and Future Scope

A small sample size (n=18) can limit generalizability of the findings to a larger population although clinically significant. Long term follow up and outcomes can determine the need for surgery and need for repeat interventions. A patient specific functional outcome on areas of life most impacted by pain and restored following procedure are undermined by comparison of overall disability indices. Subsequent studies may overcome existing limitations during research design.

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