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Comparison of pre operative and post operative clinical and radiological angles of foot in equinovarus deformity in cerebral palsy hemiplegic.

KEYWORDS: Cerebral Palsy, Hemiplegia, Tibiocalcaneal angle, Talocalcaneal angle

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ABSTRACT Cerebral Palsy (CP) is a common disability affecting children. It has been estimated that around 30% of CP, have hemiplegia. In hemiplegia the common foot deformity is equinovarus. The aim is to study the effectiveness of soft tissue procedure in equinovarus foot deformity by comparing pre and post operatively passive range of motion (ROM) at ankle with knee flexion and extension and radiologically by assessing Tibiocalcaneal angle in lateral view and Talocalcaneal angle in AP view. In our study we have included 25 patients having equinovarus foot deformity in which 18 patients underwent tendoachilles lengthening and 7 patients underwent tendoachilles lengthening with split tibialis posterior transfer. The results were statistically compared and showed ROM and angles improved post operatively.

Introduction

Cerebral Palsy (CP) is one of the common disabilities affecting children. The prevalence varies worldwide but it is approximately 0.6 to 7 cases per 1000 live births [1]. It has been estimated that around 80% of the CP children have spastic type, with 30% having spastic hemiplegia [1]. In cerebral palsy spasticity and muscle imbalance can cause one or more of the following deformities of the foot: equinus, varus, valgus, cavus, [1] [8]. In the foot, commonest deformity is equinus or equinovarus, affecting 70% of CP children [1]. Surgical management of the foot is to prevent fixed deformities and improve gait pattern while walking [7] [9]. The aim is to study the effectiveness of soft tissue procedure in equinovarus foot deformity in CP hemiplegic by comparing the results, pre and post operatively by clinical and radiological assessment.

Methods

Aims

1. To study effectiveness of soft tissue surgical procedure in management of equinovarus foot deformity in CP hemiplegia.
2. Comparison of preoperative and post operative range of motion in ankle.
3. Comparison of preoperative and post operative radiological angles in foot.
4. To provide a plantigrade foot for ambulation with or without orthosis

Assessors

1. Dr. Amit Mhambre : outcome assessor, performed intervention, performed statistical analysis of data
2. Dr. Badrinath Athani : performed intervention

Study population

1. A total of 25 patients were included in the study. The study was conducted for a period of two years. The follow up period was fifteen months to eighteen months and the mean follow up period was twelve months.
2. The patients with cerebral palsy hemiplegia with equinovarus deformity were included
3. The following patients were excluded from the study,

a. Patients having involuntary movements like chorea, dystonia, etc.

b. Patients with severe or profound mental retardation

c. Patients who are unfit for anaesthesia.

4. All the patients were admitted in AIIPMR and were evaluated in detail for the foot deformities.
5. Pre-operative and postoperative functional assessment of the lower limb was done by measurement of passive range of motion at the ankle namely dorsiflexion with knee in flexion and extension
6. The radiological assessment of the ankle and foot was done both preoperatively and postoperatively.
7. The Tibiocalcaneal angle in lateral view [Fig 1] for equinus deformity of more than 90^0 and talocalcaneal angle in anteroposterior view [Fig 2] for varus deformity of less than 15^0 were selected [2].
8. The investigation was conducted with Institutional Review Board approval.
9. Patient and in case of patient less than 18 years, patient's guardian consented to be in the study and informed consent was taken.

Intervention

The patients with equinus were subjected to the surgical procedure of Z- plasty lengthening of Achilles tendon [1] [3].

The patients with equinovarus deformity with heel varus were subjected to surgical procedure of Z- plasty lengthening of Achilles tendon and split tibialis posterior transfer to peroneus brevis [1] [3] [4] [6].

Among the twenty five patients, eighteen underwent tendoachilles lengthening and seven underwent tendoachilles lengthening and split tibialis posterior transfer for correction of equinovarus foot deformity [Table 3].

After the surgery, the lower limb was maintained in corrected position by an above knee POP cast with ankle in neutral position and knee in 5° flexion for two weeks [7].

Suture removal was done after two weeks followed by a below knee cast for four weeks.

After six weeks of immobilization, the POP cast was removed and the patients were then put on a post-operative rehabilitation programme which included,

1. Mobilization and range of motion exercises for ankle joint.
2. Stretching exercises for the spastic muscles.
3. Strengthening exercises for the ankle dorsiflexors, intrinsic muscles of the foot and quadriceps.
4. Gait training.
5. Ankle foot orthosis for positioning of foot and ambulation.

Outcome

Preoperative and Post-operative assessment of the foot was done for

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measurement of passive range of motion at the ankle with knee in flexion and extension every three months, six months and twelve months during the first year after surgery.

Pre-operative and post-operative radiological angles namely the Tibiocalcaneal angle in lateral view and Talocalcaneal angle in AP view were assessed.

The assessment was made by me and the outcome was based on physical examination of ankle and radiological measurement of foot angles.

The patients were explained that even after the operative procedure exercise program should be continued and orthosis would be needed initially which could be gradually weaned off.

Ethics
The Ethics approval was taken from the necessary ethics committee.

- **Statistical methods**

The results were statistically evaluated by paired t test. The paired t test was applied as it fulfilled the following criteria of random sample, quantitative data, sample size was less than thirty and comparison was done preoperatively and postoperatively.

The difference in each set of paired angles preoperatively and postoperatively was calculated.

The Standard Deviation and Standard Error of mean from same was calculated. The degree of freedom and t value was calculated. Since the t value is higher than the tabulated t value the difference is statistically significant.

Results
Among the twenty five patients eighteen were males and seven were females.

The patients included in the study were between the ages five to twenty five years. Among these, ten were in the age group between 5 to 9 years, nine between 10 to 15 years, three between 16 to 20 years, and three between 21 to 25 years.

Out of the twenty five subjects, fifteen had left side involvement and ten had right side involvement.

On clinical examination, the mean preoperative range of motion at ankle in knee extension was 11.4^{o} PF and mean postoperative range of motion at ankle in knee extension was 1.2^{o} DF [Table 1]. The mean preoperative range of motion at ankle in knee flexion was 3.3^{o} PF and mean postoperative range of motion at ankle in knee flexion was 5.7^{o}DF [Table 1]. The results were observed over a period of one year.

On radiological measurements, the Talocalcaneal angle in AP view and tibiocalcaneal angle in lateral view were compared preoperatively and postoperatively. The preoperative mean Talocalcaneal angle in AP view was 16.6^{o} and postoperative mean Talocalcaneal angle in AP view was 26.8^{o} [Table 2]. The preoperative mean Tibiocalcaneal angle in Lat view was 117^{o} and postoperative mean Tibiocalcaneal angle was 87.7^{o} [Table 2].

Discussion
Among the twenty five patients eighteen underwent tendoachilles lengthening and seven underwent tendoachilles lengthening and split tibialis posterior transfer for correction of equinovarus foot deformity. Among the seven cases that underwent tendoachilles lengthening and split tibialis posterior transfer it was observed that the tibialis posterior was overacting and hence a transfer was performed

After the operative procedure clinically range of motion at ankle improved.

The mean preoperative and postoperative talocalcaneal and tibiocalcaneal angles improved.

The change was significant in age groups between 5 to 15 years and less in the age groups between 16 to 25 years both clinically as well as radiologically.

The study observed that soft tissue procedures were effective in correction of deformity in the age group between 5-15 years and were less effective in correction of deformity in the age group between 16 to 25 years.

Leon Root observed that in cerebral palsy hemiplegia with equinovarus deformity, along with gastrosoleus, tibialis posterior is overacting. He performed tendoachilles lengthening and split tibialis posterior transfer in thirty hemiplegic patients and had twenty seven good results [5]. Out of the seven split tibialis posterior transfer we have done, we had five good results

The follow up could be carried out over a longer period of time to assess the postoperative outcome of surgery in terms of improvement in range of motion at ankle and recurrence of deformity. Preoperative and post operative gait analysis using the gait and motion analysis laboratory would have lead to better interpretation of results.

Acknowledgement
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Declarations
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Conflict of interest: none declared
Ethical approval: From ethic committee

TABLES

Table 1: Pre and post operative mean Ankle ROM in Knee Extension (KE) and Knee Flexion (KF)

Age Group	Preoperative ROM (KE)	Postoperative ROM (KE)	Preoperative ROM (KF)	Postoperative ROM (KF)
5-10 years	9.6^{o}PF	3.4^{o}DF	2.1^{o}DF	6.9^{o}DF
11-15 years	12.6^{o}PF	2.3^{o}DF	2^{o}PF	5.1^{o}DF
16-20 years	13^{o}PF	4^{o}PF	8.3^{o}PF	2.7^{o}PF
21-25 years	15^{o}PF	7.7^{o}PF	10^{o}PF	5^{o}PF

Table 2: Pre and post operative mean: Anteroposterior (AP) talocalcaneal angle and Lateral tibiocalcaneal angle

Age group	AP Talocalcaneal Angles (mean)		Lateral Tibiocalcaneal Angles (mean)	
	Pre operative	Post operative	Pre operative	Post operative
5-10 years	15.8^{o}	27^{o}	112.4^{o}	89.2^{o}
11-15 years	16.7^{o}	26.7^{o}	117.4^{o}	89.5^{o}
16-20 years	17.3^{o}	24.3^{o}	123.3^{o}	96^{o}
21-25 years	18.7^{o}	24.7	126.7^{o}	99.3

FIGURES

Fig 1 TIBIOCALCANEAL ANGLE IN LATERAL VIEW

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Fig 2 TALOCALCANEAL ANGLE IN AP VIEW

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Original Research Paper

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Rehabilitation Science

THE INSTITUTIONAL DEMOGRAPHIC PROFILE OF AMPUTATION IN MUMBAI.

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ABSTRACT Amputation is a locomotor disability and final outcome of various co morbidities of traumatic and non traumatic causes. The aim is to conduct a retrospective observational study using records of patients attending disability clinic from 1st January 2016 to 31st December 2016 to study the common types, causes, extremity affection, gender and age group in amputation. In the study we evaluated records of 994 patients of which 171(17.2%) were amputations, with a male to female ratio of 5.6:1, with 15.2% of double limb amputation. Our study showed maximum number of amputations were below knee (39%) followed by partial hand (18%).The study also showed maximum number of amputations occurred in age group of 51 to 60 years. The study concluded that prevalence of amputations is high in urban population. The knowledge about rehabilitation in amputees was less, warranting attention to create rehabilitation infrastructure for improvement in their lifestyle.

KEYWORDS : Demographic distribution, Congenital amputations, Traumatic amputation, Locomotor disability.

Introduction

Amputations are common outcome of various health conditions like birth defects, trauma, diabetes, peripheral vascular disease etc. Amputations form a major bulk of locomotor disabilities. [1] Baseline prevalence and demographic data is required if efforts are to be made for isolations of cause of amputations for their prevention. On the other hand post amputation, the outcome can be very good if the residual disability is adequately addressed with rehabilitation interventions and good prosthetic management. So understanding the overall affected population and demographic distributions of amputations is essential as guidance for overall rehabilitation efforts and investment to manage the problem. Currently studies available focus on causes related lower limb amputations [2,3,4,5] but data related upper limb amputation or congenital amputations is lacking making the overall picture incomplete.

Methods

Aims

1. To evaluate the overall prevalence of amputation with its demographic and topographic distribution.
2. To delineate the causes of amputation

Assessors

1. **Dr. Amit Mhambre :** outcome assessor, performed statistical analysis of data
2. **Dr. Vivek Chawathe :** outcome assessor, performed statistical analysis of data

Study population

We conducted a retrograde observational study at All India Institute of Physical Medicine and Rehabilitation, Mumbai a tertiary care unit for treatment of person with disability and a center for locomotor disability assessment and certification. Records of all the patients attending the disability certification board from 1st January 2016 to 31st December 2016 were analyzed for study.

The evaluation forms of patient attending the disability certification clinic were screened for data regarding amputation. Data of all the patients with amputation were included in the study. Data of patients with locomotor disability but without amputation was excluded from the study. Data in form of age, sex, religion, side of amputation, duration of amputation, level of amputation was collected and was submitted for analysis. Data analysis was done using Microsoft office excel 2007 version on windows 8 OS.

Ethics

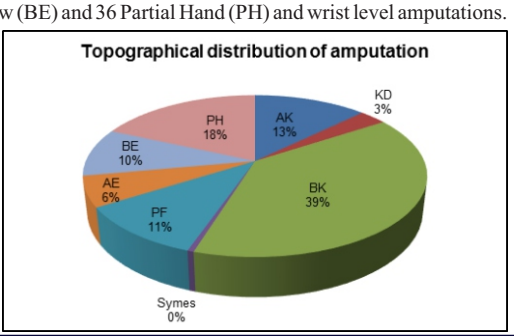
The Ethics approval was taken from the necessary ethics committee.

• Results

In our study 994 patients attended the disability clinic from 1st January 2016 to 31st December 2016 out of which 171 had amputations. Thus the prevalence of amputation as cause of locomotor disability was 17.2%. Out of the 171 patients 145 were male and 26 were female. Thus the male: female ratio is 5.6:1. Our study had 26 (15.2%) patients with amputation of two limbs, so total of 197 amputations were considered in the study. The side of amputation involved was right sided 94 and left sided 103 and over all right: left ratio was 1:1.09.

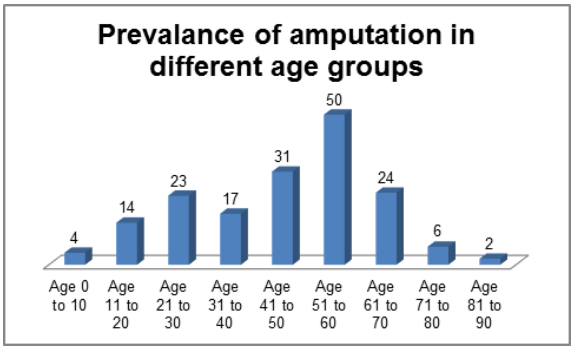
Topographical distribution of amputation

In our study in lower extremity, we had 25 Above Knee (AK), 6 Knee Disarticulation (KD), 77 Below Knee (BK), 1 Syme's, 21 Partial Foot (PF). In upper extremity we had 12 Above Elbow (AE), 19 Below Elbow (BE) and 36 Partial Hand (PH) and wrist level amputations.



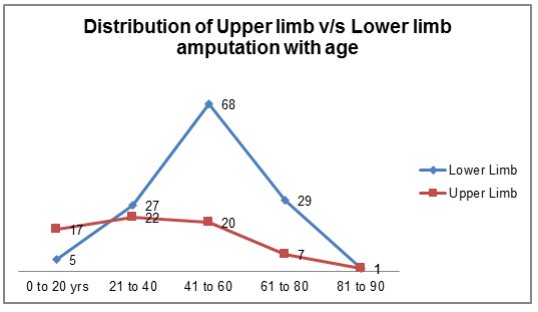
Prevalence of amputation according to age

In our study population maximum number of amputations occurred in age group of 51 to 60 (29%), followed by age group of 41 to 50 (18%), followed by 61 to 70 (14%), followed by a younger age group of 21 to 30.



Upper limb v/s Lower limb distribution

In the age group of 0 to 20 only 5 lower limb amputations were present whereas 17 upper limb amputations were present; the presentation reverses in the age group of 41 to 60 where 68 lower limb amputations were present as compared to only 20 upper limb amputations.



Causes of amputation

In our study 100(58.4%) individuals had amputations due to systemic illness as diabetes 52 (30%), peripheral vascular disease 14(8%), infection 10(5.8%), malignancy 5(2.9%), congenital 16 (9.4%), 3 individuals with miscellaneous cause as lympoedema, osteomyelitis and snake bite. In our study we found that 71(41.5%) were traumatic amputations out of which 28(16.3%) were due to road traffic accidents, 23 (13.4%) due to railway accidents, 20 (11.6%) due to other types of traumas like industrial accidents, burns, crush injuries etc.

Discussion

In our study we included patients attending the disability clinic which receives applications from throughout the city of Mumbai. Thus the data retrieved represents the urban population with locomotor disorders. The 2011 census suggests that locomotor disability is 20.3% which is the highest of all other types of disabilities. In our study we found that amputations contributed to 17.1% of total locomotor disability population screened which translates to a significant number of amputee population in India. The 2011 census also suggested that locomotor disability peaks in the population in age group of 80-89 years [6]. In our study we found that the individual with amputations peaks at the age of 51-60 years which suggest that amputation is a factor which adds locomotor disability to the aging population.

In our study we found male: female ratio of amputation to be 5.6:1 whereas ratio of locomotor disability according to 2011 census is 1.6: 1, thus suggesting the involvement of male population in amputation is far more than female as compared to overall locomotor disability [6].

In our study we could observe a distinct pattern of amputation in different age groups for upper limb and lower limbs. Upper limb amputation were on the higher side in first 4 decades of life followed by gradual reduction in number by the age above 60 years, whereas lower limb amputation peaked in the age group of 41-60 years. Higher prevalence rate of upper limb amputations could be correlated to involvement of upper limb in industrial trauma. Also higher rates of amputations in upper limb were seen in age group of 0-20 which correlates with higher rates of congenital amputations involving upper limbs. Similar study done in children at Jordan suggested that upper limb consisted of 52.17% were as lower limb congenital amputation consisted of 47.83% [7]. In our study 94.73% were upper limb and only 5.26% were lower limb with maximum number of wrist and hand level limb loss. This difference may be due to geographical difference which needs further study.

In one study done in Germany from 2006 to 2012 suggest that diabetes mellitus and arterial occlusive disease were the major cause of lower limb amputation [8]. Our study shows similar results with diabetes mellitus and peripheral vascular disease as the leading cause of amputations followed by trauma. On the contrary a similar study done in West Bengal stated of 70% of amputations was due to trauma which is significantly high as compared to our study [3]. This difference may be due to involvement of more rural population than urban where the prevalence of DM is on lower side [9].

Conclusion

Amputations followed a peculiar pattern in relation to age which peeks in geriatric age group. There was a high prevalence of amputations associated with diabetes mellitus and peripheral vascular diseases. The study concluded that the prevalence of amputations is high among the individuals with locomotor disabilities. It warrants the attention of health authorities for planning and investments in rehabilitation of amputees for promoting research for indigenous state of the art prosthesis for integration in society. The data outcome could have been better if the study could have included data from multiple centers catering person with disability. The study sample contains data from tertiary center for certification, which can easily miss data from population which is not aware of benefits of disability evaluation. There is a need for creation of a central data bank with details of amputees for further studies for better data and planning.

Declarations

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Conflict of interest: none declared
Ethical approval: From ethic committee

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ORIGINAL ARTICLE

Prevalence of Pain in Medical Representatives using Two-wheeler for Daily Commute

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ABSTRACT

Aim: To investigate the prevalence of pain in medical representatives exposed to two-wheeler riding compared with medical representatives using other modes of commuting.

Materials and methods: A total of 105 medical representatives participated in the study with history of exposure to traveling of at least 300 minutes per week with at least 60 minutes per day for 5 days a week for more than 1 year. Fifty-two of them traveled by two-wheelers and were grouped under "two-wheeler group" and 53 were grouped under "control group" as they used bus, train, or car (not self-driven) as a mode of commute. The prevalence and intensity of pain was assessed by Numeric Rating Scale (NRS) for baseline pain and worst pain, Pain Disability Index (PDI), and the Pain diagram for the pain observed during last 2 weeks.

Results: Statistically significant difference was observed in pain levels between the two groups (two-wheeler group *vs* control group): Numeric Rating Scale baseline pain ($p = 0.0315$), NRS worst pain ($p = 0.0388$), and PDI ($p = 0.010$). The pain scores of the two-wheeler group showed positive dose–response relation with time of exposure to riding. The pain distribution pattern between two-wheeler group *vs* control group was quiet different with lower back pain 36 *vs* 23% and ankle foot pain 2 *vs* 12%.

Conclusion: The study concludes that medical representatives traveling using two-wheelers as compared with bus, train, or car suffer from more cumulative trauma.

Clinical significance: Two-wheeler users have significantly higher prevalence of pain and pain-associated disability due to cumulative trauma disorder, which warrants further studies to improve the depth of our understanding about cumulative traumas.

Keywords: Cumulative trauma disorders, Ergonomics, Low back pain, Medical representative, Riders, Two-wheeler users.

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Conflict of interest: None

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INTRODUCTION

India is a developing nation with crowded streets, limited parking spaces, ever-increasing fuel prices, and limited spending capacity over transportation, making two-wheelers one of the most preferred modes of commute in Indian cities and rural areas. In 2014 to 2015, two-wheeler population in the state of Maharashtra contributed to 72% of the total number of vehicles.[1] Good amount of data is available on mortality and morbidity associated with two-wheelers due to their proneness to accidents,[2] but there are very limited data available on demography of cumulative trauma disorders, and the significance of its impact on daily two-wheeler commuters.

Medical representatives are a group of population which has to travel from place to place on a daily basis because of their professional demands. In an urban environment, commuting with a two-wheeler and by public transport is equally convenient and accessible. So the number of individuals traveling with either mode of transport was easily available for study. This group also represents a large group of population in their active age group (20–40 years) who are exposed to travel on a daily basis for making their earning or education. Thus, the conclusions of this study will represent the pain suffered due to cumulative traumas in young active urban population exposed to traveling on a daily basis.

MATERIALS AND METHODS

Study Design

We conducted a comparative observational study at the All India Institute of Physical Medicine and Rehabilitation, Mumbai. The study protocol was approved by the ethics committee of the institute. Medical representatives attending the institute, giving history of commuting more than 60 minutes per day at least 5 days a week, i.e., 300 minutes of traveling per week, were included in the study. The study was conducted between October 2015 and February 2016. Medical representatives using two-wheelers as primary mode of commute were included in the "two-wheeler group," whereas individuals using public transport, i.e., train, bus, or car, as a primary mode of commute were included in "control group." Individuals in the age group of 20 to 40 years were included as it is the most active age group. Individuals were included in

the study only if they gave history of commuting for more than a year with the given mode of transport. Individuals giving history of comorbidities, such as old significant musculoskeletal injuries as fractures or ligament tears, anxiety disorders, thyroid disorders, diagnosed case of rheumatism, and ongoing pain management, were excluded. Individuals involved in driving cars also were excluded from the study as the cumulative trauma associated with car driving was entirely different and is beyond the scope of the study. The medical representatives attending the institute were informed regarding the study and consent was taken for their participation. The study proforma was provided to the medical representative and was collected and submitted for analysis in the same setting.

Outcome

The magnitude of the pain was assessed using Numeric Rating Scale (NRS)[3] for baseline and worst pain experienced during last 2 weeks. Numeric pain rating scale is a simple and sensitive tool to gauge the severity of pain.[4] Baseline and worst pains suffered by the individuals give us good idea in the undimensional aspect of the pain. When using the NRS, participants were asked to rate their pain on scale from 0 to 10 where 0 represents "no pain" and 10 represents the "worst pain possible" using whole numbers.

The Pain Disability Index (PDI) is a simple and rapid instrument for measuring the impact that pain has on the ability of a person to participate in essential life activities. Pain Disability Index takes into account behavioral and psychological aspects of pain. Pain Disability Index also has good reliability and validity.[5-7] The scale consists of seven categories of life activities listed, and the response is scored similar to numerical rating from 0 to 10, the index is scored with minimum of 0 and maximum score of 70. The self-explanatory questions were given to the participants to be filled up and were collected with the pro forma.

The topographic location of pain was assessed using a schematic human figure and the participants were advised to shade the area of pain. The participants were allowed to shade multiple areas of the figure as per their pain distribution pattern and number of sites. The areas were divided into various anatomical regions for the purpose of data collection (Fig. 1). If any item of the pro forma was not completed, the data of that participant were not included in the study.

Statistical Analysis

The difference between the age, duration of exposure in minutes per week, baseline and worst NRS scores, and PDI was calculated using unpaired t-test. The linear correlation between the baseline NRS, worst pain NRS, and PDI was calculated using Pearson's test. The sample size was computed using the NRS as primary outcome parameter. A statistically detectable and clinically relevant within/between interaction effect size [f(V)] of 0.2 on this scale was chosen. The power of the study (1 - β) was chosen to be 0.8, an allocation ratio of 1:1, and the two-sided level of significance (α) to be 0.05. The required *a priori* total sample size computed by this method is 60. Data were analyzed using Microsoft Excel 2007 run on windows.

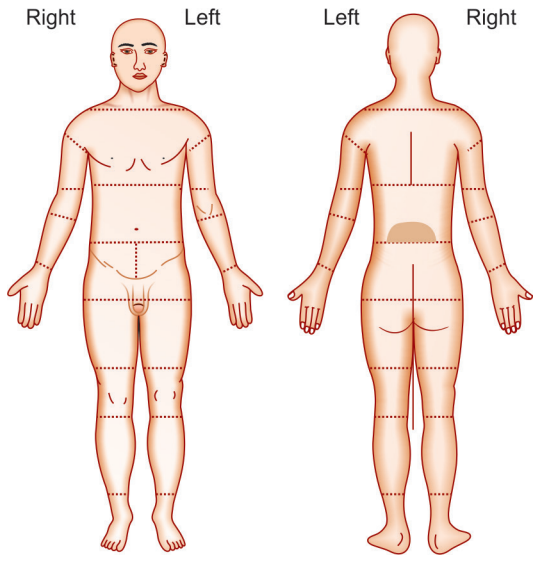


Fig. 1: Schematic human diagram for participants to mark the area of pain with an example of marking done by a participant in the painful region of the body

RESULTS

From a total of 120 medical representative screened for the study, 59 of them were two-wheeler users, whereas 61 were non two-wheeler (control group) users. Seven candidates from "two-wheeler group" and eight candidates from "control group" were excluded as they did not satisfy the inclusion criteria (Table 1).

No statistically significant difference was observed in the age of the individuals participating in the two groups (two-wheeler group × control group), with p = 0.8782. No statistically significant difference was observed in the time duration of exposure in minutes/week of the two groups, with p = 0.4412. So the two groups were comparable in terms of age and duration of exposure (Table 2).

Comparison between Pain Scores

There was a statistically significant difference observed between the two groups (two-wheeler group × control group) when the baseline pain and worst pain on NRS

Table 1: Data of medical representatives screened for the study

Two-wheeler group	*Control group*
Total no of candidates screened: 59	Total no of candidates screened :61
Total no of candidates excluded: 7	Total no of candidates excluded: 8
Reasons of exclusion • Less duration of exposure to travel: 2 • History of major injury : 2 • History of comorbidity: 3 – History of anxiety disorder needing intermittent medications: 2 – History of hypothyroidism on treatment: 1	Reasons for exclusion • Less duration of exposure to travel: 2 • History exposure to car driving on daily basis: 1 • History of major injury: 2 • History of comorbidity: 3 – History of hyperuricemia on treatment: 2 – History of hypothyroidism on treatment: 1

Table 2: Demographic data of the "two-wheeler group" and "control group" and results of comparison of the two groups

	Two-wheeler group	*Control group*	*p-value*
Sample size	52	53	
Male:female	50:2	51:2	
Mean age [SD] (years)	28.76 (4.55)	28.6 (6.32)	0.8782
Duration of travel [mean (SD)] (minutes/week)	1030.96 (515.14)	958.3 (445.99)	0.4412
Baseline pain [mean (SD)]	3.75 (2.01)	2.92 (1.85)	0.0315
Worst pain [mean (SD)]	5.61 (2.52)	4.5 (2.60)	0.0388
PDI [mean (SD)]	24.76 (16.70)	17.35 (11.89)	0.0101

SD: Standard deviation

were compared, with p = 0.0315 and p = 0.0388 suggesting that pain in two-wheeler group was more than control group. Statistically significant difference was also found when PDI of the two groups was compared (p = 0.0101), suggesting that the impact that pain has on the ability of a person to participate in essential life activities was more on two-wheeler group than on control group.

Dose–Response Relationship

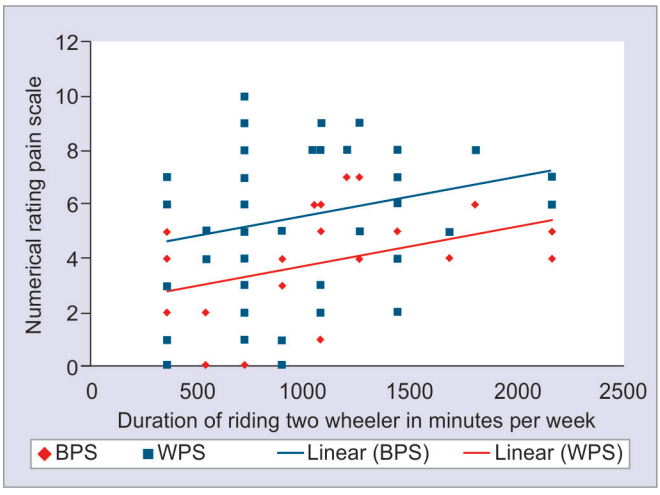
The correlation between baseline pain NRS *vs* duration of exposure to riding (R = 0.3772, p = 0.0058) and worst pain NRS *vs* duration of exposure to riding (R = 0.2877, p = 0.038626) is positive and statistically significant (Graph 1). The correlation between PDI and exposure to riding was very weakly positive with R = 0.1537 and was not statistically significant (p = 0.2766; Graph 2).

Pain Distribution

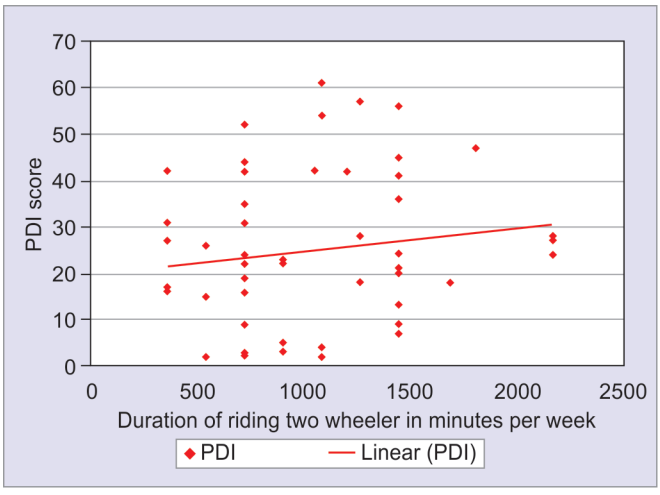
Low back pain was the commonest among the two-wheeler users, with 36% of participants complaining about it, other areas commonly involved in the pain were neck pain (22%), upper back pain (13%), and wrist-hand region pain (11%) (Graph 3).

DISCUSSION

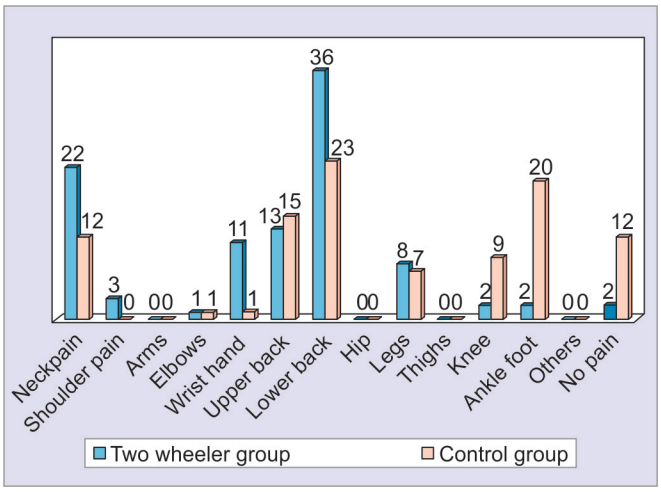
The goal of the study was to identify if there is any increase in the prevalence of pain in the individuals riding two-wheelers. The study also attempts to measure the impact of



Graph 1: Changes in the baseline NRS pain score and worst NRS pain score with increasing minutes of exposure per week in "two-wheeler group"



Graph 2: Changes in the PDI with increasing minutes of exposure per week in "two-wheeler group." BPS: Baseline NRS pain score; WPS: Worst NRS pain score



Graph 3: Difference in the pattern of distribution in "two-wheeler group" and "control group"

this pain on day-to-day life of these individuals. This study tries to identify if a particular pattern of pain is observed in such individuals. The subjects chosen were from medical marketing profession, i.e., medical representatives. They represent a group of population of an urban environment which is in the age group of 20 to 40, an active lifestyle, with good amount of stress of professional competition, with responsibilities of family and home, and with active participation in social, recreational, and sexual activities. The character of this group can strongly represent the overall urban population of this age group.

Prevalence of Pain

Our study showed significantly higher prevalence of pain in two-wheeler users as compared with individuals using trains, buses, or cars (not actively involved in driving) for daily commute. In our study, both baseline pain NRS and worst pain NRS were significantly higher as compared with the control group. Similar study was done in 1998 involving police officers, which suggested that the prevalence of low backache was significantly higher in officers involved in car driving as a primary task during duty hours as compared with general duty officers; the study also found that the police motorcyclists had more point prevalence of back pain as compared with police car driver group. The higher PDI also suggests that this higher pain levels significantly disrupt the day-to-day activities of the two-wheeler users. Thus, two-wheeler users are more prone for musculoskeletal pain and higher level of cumulative trauma. As the two groups were well matched, the factor we felt responsible for such a difference in pain scores is lack of chance to change posture during commute, lack of back support, recurrent active recruitment of muscles for balancing purpose and to handle the weight of the bike, and environmental stress factors, such as exposure to cold[8,9] or heat.[10] Our subjects were from an urban environment and riding in traffic conditions may be more stressful as compared with a rural or suburban environment. There is also a very minimal possibility of customization for bikes from ergonomic point of view in our setup.

Dose–response Relationship

Our study showed positive dose (minutes of exposure per week) to response (pain scores) relationship. The lower r values of correlation suggest that the correlation is not very strong. Our study could not strictly differentiate riders riding environments preferably on highways or riding on crowded city roads, which we feel significantly affects the cumulative trauma associated with riding and thus effects the correlation with pain. The similar study done on police officer involved in car driving also showed an inconsistent dose–response relationship.[11]

Distribution of Pain

In our study, pain distribution was more around neck, lower back, upper back, shoulder, and wrist-hand region. Each site of pain may be associated with cumulative effect of posture of the rider or could be due to isolated causes. Neck pain could be associated with posture as well as improper or heavy head gear and use of heavy bag. Wrist-hand pain and shoulder pain could be associated with improper positioning of handle bars or disproportionate weight or balance of the bike. Individuals suffering from low back ache were on higher side in both the groups, which suggests that the pain could be associated with posture and riding primarily or aggravation of underlying problem. Due to very less amount of research on this subject, we could not find good data to support these findings. The percentage of individuals having no pain was 16.98% in the control group, whereas only 3.84% of individuals were pain free in two-wheeler group. Individuals in the two-wheeler group had 1.61 sites of pain per person on average, whereas the control group had 1.24 sites of pain on average.

LIMITATION OF STUDY

Our study could not measure the exact time of exposure to two-wheeler riding or traveling and was dependent on the history given by the participants. Our study could not isolate the riding conditions of the two-wheeler users as we feel riding on highways or riding on crowded roads is a very important factor for cumulative traumas leading to pain. Our study only included medical representatives so that the confounding factors could be minimized, but the population of medical representatives may not completely represent the population of urban two-wheeler users. Our study had only 4% female population, so the findings of this study need not represent female two-wheeler riders.

CONCLUSION

The findings of the study can be concluded as follows:

- There is a higher prevalence of musculoskeletal pain in medical representatives exposed to daily long-term use of two-wheelers.
- There is also a significant disability or limitation of daily activities associated with this pain in two-wheeler users.
- There is a good dose–response relationship between exposure to two-wheeler use and pain.
- Lastly, the various areas of distribution of pain point out toward the research and ergonomic intervention possible in this subject.

CLINICAL SIGNIFICANCE

Two-wheeler users have significantly higher prevalence of pain and pain-associated disability due to cumulative traumas. The pain due to two-wheeler use also follows peculiar topographic distribution pattern. These findings open up scope for further studies in subjects of biomechanics, ergonomics, and environmental factors associated with cumulative traumas in two-wheeler users and their management.

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Original Research Paper

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Rehabilitation Science

THE ROLE OF INTRA-ARTICULAR INJECTION SODIUM HYALURONATE IN REHABILITATION OF OSTEOARTHRITIS KNEE

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ABSTRACT

OBJECTIVE: To assess the effect of injection sodium hyaluronate in osteoarthritis knee as an add on treatment to routine Medication and Physiotherapy.

PATIENTS AND METHODS: 6 month observational study on total 60 patients suffering from primary osteoarthritis knee of grade II and III according to Kellgren-Lawrence Grading Scale was conducted. Patients were categorized in 2 groups: Group 1 patient opting for intra-articular injection sodium hyaluronate and Group 2 patients opting only routine line of treatment. Data was collected on demographic features of the individuals and changes in the VAS scores, KOOS scores and Lequesne index were measured.

RESULTS: Baseline characteristics were similar between the two groups. Group with visco-supplementation showed overall better outcome as compared to the control group at the end of 6 month. But at the end of 1 month no significant difference was felt in both the groups regarding the outcome. There was not much difference in side effect profile in both the groups.

CONCLUSION: a course of 3 sodium hyaluronate injections along with routine medication can improve the outcome of treatment for longer period.

KEYWORDS : Hyaluronic acid, Osteoarthritis, Intra-articular, Sodium Hyaluronate

INTRODUCTION

Osteoarthritis is the most common form of arthritis, primarily a non inflammatory disorder of movable joints. It is a joint disease which primarily affects cartilage. This results in the wearing out of the joint surface characterized by pain, and increasing disability. The prevalence of documented knee OA in the general practice in those aged >45 years is found to be 12.5%.[1] The disease can have an impact on several aspects of a patient's life, including functional and social activities, relationships, socioeconomic status, body image, and emotional well-being. The treatment of osteoarthritis consists of pain reduction, modification of activities of daily living, maintenance of range of motion and improvement of joint functions.[2]

Decision on the choice of therapeutic approach need to consider co-morbidities, co-medications, and relative cost and likely success of the intervention, as well as taking into account the age, wishes, lifestyle and previous experiences of the patients. Non-surgical therapies include physiotherapy, NSAIDs, cartilage protective drugs such as Diacerein, Glucosamine sulphate, oral and intra-articular steroids. Intra-articular corticosteroid injection provides relief of acute knee pain and inflammation, but the effects are relatively short lived (approximately 6 weeks).

Viscosupplementation is a novel, safe, and possibly effective form of local treatment for osteoarthritis. Viscosupplementation with hyaluronic acid [HA] helps to improve the physiological environment in an osteoarthritic joint by supplementing the shock absorption and lubrication properties of osteoarthritic synovial fluid. Addition of intra-articular injections of Hyaluronic acid along with physiotherapy, NSAIDs and Diacerein can show a significant effect on various symptoms of osteoarthritis knee and can improve the patient's quality of life. Thus effect of intra-articular viscosupplementation as adjuvant with other conservative therapy still needs further evaluation.

MATERIALS AND METHODS

Outpatients fulfilling the American College of Rheumatology clinical or radiological criteria for the diagnosis of knee OA were recruited for the study[3].

Patients included were age group of 50 to 70 yrs who had consented for the study with bilateral or unilateral primary osteoarthritis of knee grade 2 and 3 according to Kellgren-Lawrence Grading Scale[4]. Patients having pain as assessed with Visual Analog Scale > 30. Rescue drug in the form of Paracetamol 500 mg was advised. Evaluations were done after 2 days of wash off period during which patients were not allowed NSAIDs or other medication to reduce pain. Aspirin at an antiplatelet dose (<500 mg/day) was allowed.

Patients excluded during screening were those suffering from secondary osteoarthritis of knee (Due to injury/ inflammatory / metabolic /rheumatic disease, osteonecrosis etc...), knees with Grade 1 or 4 osteoarthritis changes according to Kellgren-Lawrence Grading Scale, patients with contraindications to intraarticular knee injections, patients with global pain < than 30 on Visual Analog Scale and patient with obesity i.e. BMI >28 kg/m^2. Patients having neurological deficit or other co morbidity such as hip osteoarthritis, congenital deformities, varicosities, etc. were excluded.

METHODOLOGY:

122 patients coming to the outpatient department of All India Institute of Physical Medicine & Rehabilitation were screened for the study from November -2017 to May -18 out of which 35 patient satisfying the inclusion criteria and opting for intra-articular injection of sodium hyaluronate were considered in Group 1 and 35 patient satisfying the inclusion criteria and opting for conservative treatment were considered in Group 2. Before the study was started, patients completed a two week washout period, in which treatment with oral steroids and non-steroidal anti-inflammatory drugs and other

analgesics was prohibited. 5 patient from Group 1 and 5 patients Group 2 were lost during follow up.

Group 1: Patients in this group were given intra-articular viscosupplementation i.e. 2.5 ml of 1% Sodium Hyaluronate [molecular weight 650,000-1,200,000 Daltons] every week for 3 weeks, along with oral medications, Diclofenac sodium 50 mg BD for 7 days and Diacerein 50 mg OD for 3 months and physical therapy [quadriceps strengthening exercises].

The injection used is available in form of prefilled syringes. Asepsis was maintained by cleaning the area with Betadine solution followed by surgical spirit. After draping the injection was given by 20 G 1inch needle by superior-medial approach. Physical therapy where started after 2 days of injection.

Group 2: Patients in this group were given oral medication, Diclofenac sodium 50 mg BD orally for 7 days and Diacerein 50 mg OD for 3 months and physical therapy [quadriceps strengthening exercises].

In case of bilateral knee osteoarthritis though treatment was given bilaterally only the more painful knee was considered for study.

Evaluations: Evaluations were made at baseline, at the end of 1 month and at the end of 6 month according to the study performa. Patients were asked to fill the questionnaires at the time of visit. The patients were evaluated by three questionnaires, visual analog scale[VAS], KOOS scale and Lequesne index. KOOS scale which includes three sub scales i.e. for symptoms, stiffness, pain and function, daily living. Lequesne index also includes three subscales i.e. pain or discomfort, maximum distance walked and activities of daily living. Safety of the ongoing medications was assessed during follow-ups.

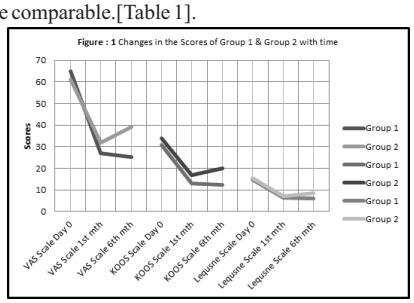
RESULTS

Statistical difference between the means of various parameters as age, weight, BMI, VAS score at day 0, KOOS total Score at day 0, Lequesne index pain score, Lequesne index maximum distance score and Lequesne index ADL score at day 0,

Table 1 - Baseline data of the two groups

	Group 1(n=30)	Group 2(n=30)	P-value	T score	SE	Significance of difference
Age	61.5(5.69)	62.4(7.16)	0.59	0.5418	1.661	Not Significant
Weight	70.2(6.33)	72.33(6.71)	0.2107	0.2107	1.685	Not Significant
Height	165.9(5.56)	168.93(5.11)	0.0339	2.1733	1.38	Significant
BMI	25.53(1.69)	25.32(1.61)	0.6254	0.4908	0.428	Not Significant
Global VAS score at day 0	65.03(8.95)	61.26(10.44)	0.1391	1.4999	2.511	Not Significant
KOOS Total score at day 0	30.66(6.97)	33.95(6.92)	0.0717	1.8347	1.793	Not Significant
Lequesne index pain score at day 0	5.73(1.5)	5.5(1.33)	0.5277	0.6353	0.367	Not Significant
Lequesne index maximum distance score at day 0	3.6(1.13)	4.16(1.08)	0.0526	1.9785	0.286	Not Significant
Lequesne index ADL score at day 0	5.3(1.12)	5.88(1.15)	0.0854	1.7503	0.295	Not Significant
Lequesne index score at day 0	14.7(3.12)	15.36(3.22)	0.4196	0.8128	0.82	Not Significant

of Group 1 and Group 2 was not significant suggesting that the two groups are comparable.[Table 1].



At the end of 1month the mean VAS scores of Group 1 and Group 2 were 27.1 and 31.83 respectively which were statistically similar with p =0.2109. But at the end of 6 month the mean VAS scores of the respective groups were 25.16 and 39 difference of which was statistically very much significant with p =0.0018, suggesting significant improvement in pain in Group 1 as compared to Group 2 end of 6 months.[Figure 1]

At the end of 1month the mean KOOS Total score of Group 1 and Group 2 were 13.07 and 16.68 respectively which were statistically similar with p =0.0713. But at the end of 6 month the mean KOOS Total score of the respective groups were 12.16 and 19.18 difference of which was statistically very much significant with p =0.0011, suggesting significant improvement in overall symptoms of osteoarthritis knees in Group 1 as compared to Group 2 end of 6 months.[Figure 1]

At the end of 1month the mean Lequesne index score of Group 1 and Group 2 were 6.4 and 6.93 respectively which were statistically similar with p =0.4904. But at the end of 6 month the mean Lequesne index scores of the respective groups were 6.11 and 8.51 difference of which was statistically significant with p =0.0071, suggesting significant improvement in overall symptoms of osteoarthritis knee in Group 1 as compared to Group 2 at the end of 6 months.[Figure 1]

Adverse effects

Table 3 - Distribution of cases according to Adverse Effects

Adverse effects	Group 1	Group 2
Knee pain during or after injection	7(23%)	0(0%)
Diarrhoea	9(30%)	11(37%)
Gastritis	1(3%)	2(7%)
Symptoms of allergic reaction	0	0
Others	0	0

23% of patients complained of pain in the injected knee lasting not more than 3 days. 20 patients out of total patients of 60 gave history of diarrhea after starting Diacerein therapy.

DISCUSSION

The study was an observational controlled study done on 60 patients and was designed primarily to assess the efficacy of injection hyaluronic acid in management of osteoarthritis knees. It was found that inclusion of intra-articular *hyaluronic acid* is effective in reducing the symptoms for longer duration of time as compared to the patients managed with only NASID's, Diacerein and physical therapy. The study also showed that the injections were well tolerated.

In our study we had observed 60 patients in two groups. Group 1 was the study group, it showed improvement in the form of change in mean global VAS scores from 65.03 to 25.16, KOOS score changed from 30.66 to 12.16 and Lequesne index from 14.7 to 6.11, similar changes could be seen in other studies. One of the study done in AIIMS showed change in Lequesne index of 10.58 at baseline to 5.7 at the end of 24 weeks.[6] Our study showed greater changed in score which might be attributed to the combination of pharmacological management of NSAIDs and Diacerein and physical therapy with intra-articular injection of HA.

Another 3 armed study at Cochin hospital France showed change in VAS scale of 29.7 and change in Lequesne index of 4.8 at the end of one year in a sample of 131 patients, confirming the efficacy at the end of one year with a larger sample size.[7] Our studied showed more efficacy which might be attributed to smaller duration of follow up and combination of disease modifying drugs with intra-articular HA.

A study done in Whipps cross hospital in London was a randomized, blinded, placebo controlled trial with 6-month follow-up of 50 patients which showed statistically significant effect of intra-articular HA in improving walking pain and knee function.[8]

In our study 23% patients complained of knee pain lasting for more than 24 hrs after intra-articular injection during ether of the weekly sessions of 3 intra-articular injections in Group 1. 30% patients from Group 1 and 37% patients from Group 2 complained of mild diarrhoea and 20% patients complained of gastritis in Group 1 and 17% patients in Group 2.

In study conducted in Cochin hospital France showed 17% patients had knee pain after intra-articular injection, which was similar to our study. 48% of the study sample complained of diarrhoea which was greater than our study which could be attributed to higher dose of Diacerein given to the patients. Also the incidence of gastritis was 4% was similar to our study.[7] In our study attempt was made to find the efficacy of the combination treatment that could be given, so as to optimize the effect of the overall therapy reducing the side effect of one particular drug. Thus in our study we could marginally reduce the diarrhoea associated with Diacerein.

One of the studies has suggested that intra-articular viscosupplementation is not significantly effective. This study had two major differences, first was the sample size was very large and secondly, this study had a huge placebo response hiding a real treatment effect. The placebo group in this study showed changes in global VAS scale of 31.1 and Lequesne index changed by 4.54 which were comparable with the patients given intra-articular viscosupplementation at the end of one year.[7]Thus the effect of placebo could not be ruled out in our study as the patients in control group were not given any sort of knee interventions.

In our study assessment was done for improvement in activities of daily living by KOOS subscale and Lequesne subscale both showed improvement in function. The mean scores reduced from 16 to 6.704 in KOOS subscale and 5.36 to 2.5 in the Lequsnes's sub scale. Thus suggesting improvement in activities of daily living and thus improving the quality of life.

CONCLUSION

In conclusion, in this observational controlled study, a course of 3 injections of sodium hyaluronate combined with pharmacotherapy and physiotherapy was well tolerated and effective in patients with osteoarthritis of the knee, with no systemic side effects attributed to the treatment. It effectively reduced the pain in the knee, and increased mobility, drastically reduce the morning stiffness. It also improved the quality of life by improving patients performance in activities of daily living and maximum distance walked in the of Kellegren's Grade II to III included in this study. And most of the improvements obtained from the baseline were maintained till the end of 6 months. The study also emphasised the role of pharmacotherapy with NASID's and Diacerein and physical therapy like quadriceps strengthening exercises which was obtained in control group without intra-articular hyaluronic acid therapy.

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Original article:

Osteoarthritis knee pain: An unjustified diagnosis

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Abstract-

Introduction - Knee is commonest joint associated with pain and in common setting the most cause is attributed to osteoarthritis for pain. Despite various specific inflammatory and mechanical causes described for knee pain, the generalization of term osteoarthritis knee is on rise.

Objectives - The primary objective of the study was to highlight various common causes of knee pain in patients following in OPD who are generalized under common term osteoarthritis knee pain.

Methods - Cross-sectional observational study set in out patient department of All India Institute of Physical Medicine and Rehabilitation, Mumbai, over a period of 3 weeks (15 OPD). Data was collected from the patients who between 18 years to 60 years of age reporting for knee pain. The data was analysed for mean number of cases over the number of samples for each diagnosis.

Results- For total of 120 patients reporting, we were able to diagnose specific causes for knee pain in each patient. None of the patient were given diagnosis of osteoarthritis knee for the cause of pain because of changes present on radiological imaging. The diagnosis was based on history of patient and findings of clinical examination. The causes of knee pain found in study were patellofemoral pain (36%), pes anserinus tendinitis (24%). Medial collateral ligament sprain (11%) as well as knee effusion (9%), ligament laxity (6%), Bakers cyst (3%), lateral collateral ligament sprain (3%), infrapatellar bursitis (2%), prepatellar bursitis (2%) and quadriceps tendonitis (2%).

Conclusion - It is necessary to understand that osteoarthritis knee is a degenerative condition, but there had been numerous studies that states that there is association between inflammatory conditions and pain in osteoarthritis knee pain. Diagnosing a person only on basis of radiological findings is unjustified as other minor conditions can be treated in the setting of degenerative changes in knee and when treated well, can alter the course of derangement of biomechanics due to osteoarthritis knee and improve quality of life (14). In OPD settings emphasis should be sky high on elicitation of proper history and clinical examination which proves worthwhile in management of this commonly debilitating yet manageable knee condition.

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Introduction-

Knee joint is the commonest joint associated with pain which is also encountered in the same proportion in any pain management clinics. The commonest reason of being notified in such a high proportion is because it is weight bearing joint. But we are facing an epidemic of term osteoarthritic knee pain for possibly each case coming for treatment of same when there has been a proven association between inflammatory features and pain in osteoarthritis knee (12).

Methods-

Study design- cross sectional observational study

Settings- out patient department in All India Institute of Physical Medicine and Rehabilitation

Participants- patients of age 18 and above reporting in OPD with complaints of knee pain

Data sources/measurement- All patients who reported in OPD with knee pain were taken into consideration for the observational data collection. The data consists of demography and the diagnosis made by the consultant carrying out the clinical examination of the patients.

Study design- the data was collected over the patients approaching us in a total of 15 number of OPD. The data was tabulated in form of the number of OPD and the specific cause of knee pain in reporting patients. Study was carried over a period of 5 weeks (3 OPD/week).

Results

Participants-

As described above the participants were patients reporting in OPD of our institute with the chief complaint of unilateral or bilateral knee pain. The data was collected in the OPD only after full clinical examination carried out by the consultant attending the patients. A thorough clinical examination was carried out and then primary investigations and imaging like X-rays were also reviewed.

Descriptive data –

there were total of 120 patients reported with knee pain in OPD out of which 83 were female (69.16%) and 37 were males (30.83%). Mean age of presentation was 34.74 years with youngest age of presentation for knee pain was 24 years and oldest was 57 years in this study. 77 of 120 patients self-reported as having osteoarthritis knee as told to them by previous treating physician. Patients only who did not take any pain medication in preceding 72 hours were included in the study. All underwent baseline blood investigations like CBC, ESR, CRP and RA factor along with X-Ray knee anteroposterior and lateral view.

Outcome data –

The analysis of data revealed the most common cause of knee pain was patellofemoral pain (36%) followed by pes anserinus tendinitis (24%). Medial collateral ligament sprain (11%) as well as knee effusion (9%) was also a commonly observed cause for knee pain. Other diagnosis that were observed as a cause of knee pain were ligament laxity (6%), Bakers cyst (3%), lateral collateral ligament sprain (3%), infrapatellar bursitis (2%), prepatellar bursitis (2%) and quadriceps tendonitis (2%).

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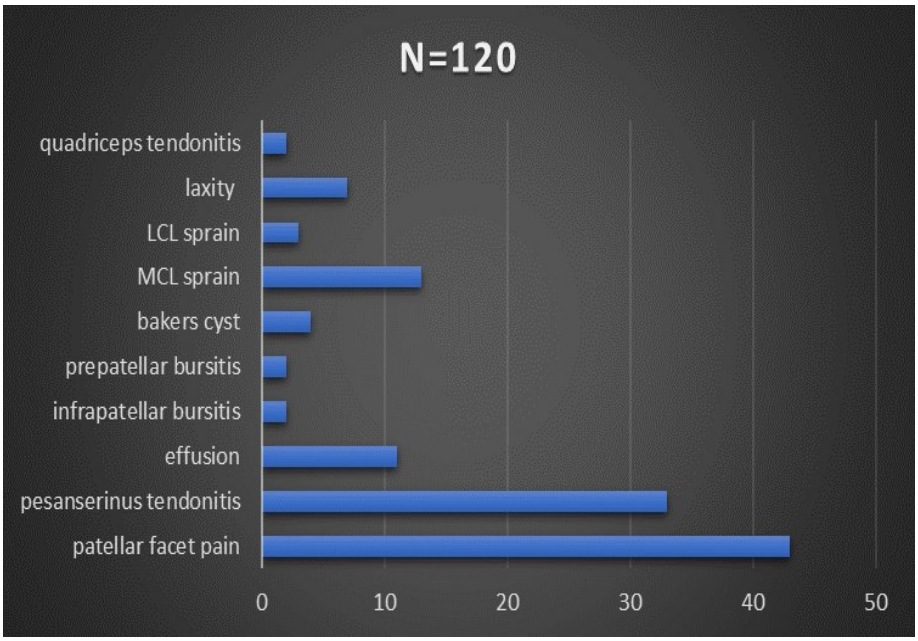

Fig 1. Showing the proportion of patients with specific diagnosis for knee pain.

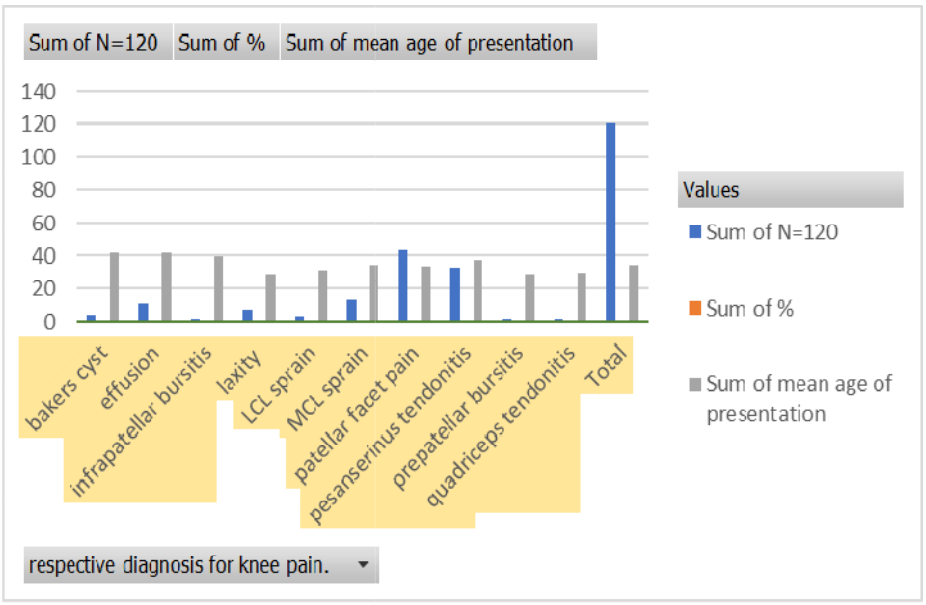

Fig 2. Collective data presentation showing sample size, mean age of presentation for each diagnosis and proportion of each diagnosis.

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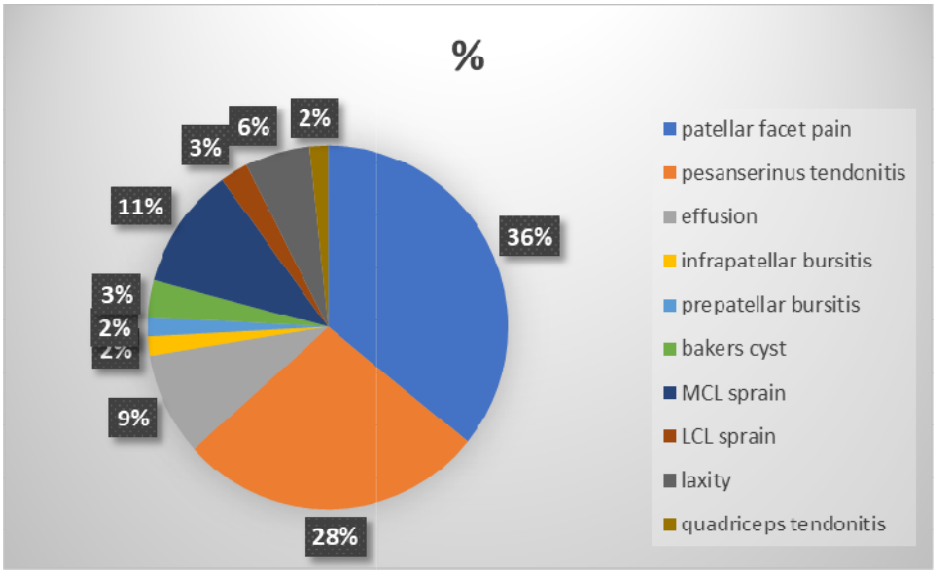

Fig 3. Proportion of each diagnosis in the observed population.

Discussion

Findings from this representative sample of patients attending OPD of AIIPMR shows that most of knee pain patients had declared diagnosis of osteoarthritis knee (64.17%) which according to them is the cause of reported knee pain, on the contrary symptomatic osteoarthritis knee is seen in about 12% of adult population aged 60 and above (16,17) At the same time, however the study shows that despite having documented osteoarthritic changes in knee the cause of pain can be very focal and discreet. When we examined the patients not all met the Criteria given for Osteoarthritis diagnosis by American College of Rheumatology (ACR). Adding to the same trend, certain diagnosis must be sought for the cause if patients are of middle age group in whom the correlation between the X-ray findings and clinical presentation varies, though studies are needed to be done separately to establish this finding. Our diagnosis was made by the provocative tests described in literature.

Patellar facet pain signified patellofemoral pain syndrome which is the most common cause of knee pain in the outpatient setting. As described causes are imbalances in the forces controlling patellar tracking during knee flexion and extension, more with overloading of the joint. Risk factors are overuse, trauma, muscle dysfunction, tight lateral restraints, patellar hypermobility, and poor quadriceps flexibility. Typical symptoms include pain behind or around the patella that is increased with running and activities that involve knee flexion. Findings in patients with PFPS range from limited patellar mobility to a hypermobile patella. To confirm the diagnosis, patellar mobility and patellar tilt test were done along with eliciting patellar facets tenderness. For many patients with the clinical diagnosis of PFPS, imaging studies are not necessary before beginning treatment (1).

Pes anserinus tendino-bursitis syndrome (PATB) has been frequently diagnosed based only on clinical features that may cause equivocal interpretations. Etiology includes trauma, retraction of posterior thigh muscles, bone exostosis, irritation of the suprapatellar plica, damage to the medial meniscus, pes planus, genu valgum, infection, and foreign

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body reaction (2). History of presentation is quite typical, and it is characterized by pain in the proximal medial region of the knee, approximately 5 cm below the medial joint interline of the knee, especially
in overweight people with signs of degenerative joint disease. Knee X-rays are usually normal but can also show bony exostosis or signs of osteoarthritis of the medial compartment. This syndrome is not related to the degree of the degenerative process, i.e., if more advanced, it does not predict the presence of anserine bursitis/tendinitis (3).

Medial collateral ligament (MCL) injuries are often reported and diagnosed when the injury is established into a laxity, but valgus stress test which indicates tenderness of MCL and swelling but no loss to the integrity of structure beneath is suggestive of MCL sprain.

Effusion is a general term for increased intraarticular fluid; it may be caused by excess synovial fluid, blood, or occasionally pus. The detection of an effusion clinically done by visible fluid wave elicitation in mild effusions and for palpable fluid wave for slightly larger effusions. For large swelling ballotable patella sign was elicited (4).

Knee laxity is a generalized term which can be a result of injuries to one or more major ligaments present around the knee to provide stability viz, Anterior Cruciate and Posterior cruciate ligament, anterior and posterior collateral ligaments, popliteal ligament. Anterior laxity is a sign of ACL injury elicited by anterior drawer and Latchman's test. Posterior laxity caused by damage to PCL can be assessed by posterior drawer test and Godfrey's test. Collateral ligament damage leading to laxity were assessed with valgus and varus stress test. External rotation test was done to rule out posterolateral laxity caused by simultaneous injury to LCL, popliteus tendon and associated structures of posterolateral ligament complex.

Quadriceps tendonitis or Jumper's knee is defined as painful chronic overuse injury of the extensor mechanism of the knee joint. High incidence of this entity is found in persons involved in athletic activities as jumping sports as basketball, volleyball etc. chronic overload of the knee extensor mechanism is the main cause of the condition which can be easily diagnosed by history and clinical examination and USG extensor tendon when required (5). Two examination 'passive flexion-extension sign" and the "standing active quadriceps sign" were assessed to diagnose the condition clinically (6)

Superficial bursitis occurs common in prepatellar bursa and less commonly to infrapatellar bursa of knee. Diagnosis is usually made on clinical presentation and examination. Involved site is swollen and tender to palpate. With more chronic form there might be range restriction (7) Overt clinical symptoms related to chronic microtrauma causing bursitis may not be very dramatic but careful examination can help in making diagnosis. The differential diagnosis of superficial bursitis is broad and extends beyond distinguishing infection (septic bursitis) from other causes. Conditions that might be mistaken for bursitis, such as joint effusions, septic and inflammatory arthritis, cellulitis, and Morel-Lavallée lesions (shearing of the skin and subcutaneous tissues from the underlying fascia), must be identified (8,9)

Key results –

Currently we are battling "self-reported doctor-diagnosed arthritis", in which patients themselves reported that a physician had previously diagnosed them with arthritis (13,15). This situation comprises many factors which needs to be questioned and analysed but for one time to consider such statements can cloud a physician clinical ability particularly in overworked setting in our country.

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When stressed to perform simple and effective examinations on a patient with set of specific clinical findings we can alleviate the common basket diagnosis for every knee pain patient.

As described, a patient with equal radiographic grades of OA in both knees usually

presents with unequal visual analog pain scale (VAS) pain scores, and sometimes even with pain in only one knee. The reason for the discrepancy between pain and radiographic structure lesions is probably that the origin of pain is multifactorial (10,11) and when tackled separately we can slow down the course of altering biomechanics due to degenerative changes in knee.

It is essential to elicit the right history which can help to make a diagnosis more correctly.

As analysis in our study shows that conditions like patellofemoral pain syndrome and pes anserinus tendinitis are more common in middle aged female population, who are also very likely to respond to appropriate pharmacological intervention and activity modification. For effusions and different bursitis, it is essential to rule out any local pathology as well as systemic infections. These conditions can be a result of overwork as well as different systemic disorders and have a shorter history of presenting illness. Middle aged and physically active individuals are more prone to conditions like sprains and laxity. Laxity can also be observed because of some congenital conditions, previous handling of joint in surgeries and trauma.

Conclusion-

It is necessary to understand that osteoarthritis knee is a degenerative condition, but there had been numerous studies that states that there is association between inflammatory conditions and pain in osteoarthritis knee pain. Diagnosing a person only on basis of radiological findings is unjustified as other minor conditions can be treated in the setting of degenerative changes in knee and when treated well, can alter the course of derangement of biomechanics due to osteoarthritis knee and improve quality of life (14). In OPD settings emphasis should be sky high on elicitation of proper history and clinical examination which proves worthwhile in management of this commonly debilitating yet manageable knee condition.

Limitations-

The study has its strengths and limitations. 1st strength being a direct observational study based on findings of a single physician treating the included patients. Although one might argue that the study is completely based on the clinical findings with no corroboration with radiological and other investigations to strengthen the findings interpretation. The sample size is always an issue, but ours was relatively in moderation given to the size of patients we treat. Also, we didn't have any stringent inclusion or exclusion criteria which can raise concern over the generalizability of evidence we provide. But even with all this we can assess outcomes in regular clinical practice.

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