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RESEARCH ARTICLE

STUDY ON EFFECT OF NSAID'S IN ACUTE MPDS AND NSAID'S AND SSRI'S IN CHRONIC MPDS

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ABSTRACT

Aim : To see the effect of NSAIDs' in acute MPDS and NSAIDs' with SSRI in chronic MPDS using the universal tool for pain assessment before and after treatment and to assess the age and sex prevalence of the disorder.

Materials And Methods: In this study 30 patients with acute MPDS and 30 patients with chronic MPDS of either gender who were diagnosed using the research diagnostic criteria for MPDS were selected. The patients were of the age group 18 to 60 years. Patients with acute MPDS were given NSAIDs' for one week and those with chronic MPDS were given NSAIDs' and SSRI for one month. Pain was assessed before and after treatment using universal tool for pain assessment.

Statistical Analysis: It is a prospective study where the severity of symptoms in patients was assessed before and after treatment, the age, sex prevalence of the disorder was calculated using mean, frequency standard deviation and paired t test.

Result: A total of 60 patients - 30 with acute MPDS and 30 with chronic MPDS were subjected to NSAIDS alone and NSAIDS and SSRI in combination respectively. The study showed female preponderance. The mean score with universal pain assessment tool before and after treatment was 8 and 3.5 for acute MPDS and 7 and 3 for chronic MPDS respectively. The student t test showed p-value of <0.005 which was significant.

Conclusion: Treatment with NSAIDS for acute MPDS for one week and NSAIDS and SSRI for chronic MPDS for one month decreased the intensity and severity of symptoms in MPDS. However the long term effects on quality of life could not be assessed. The study needs to be conducted in a large scale to evaluate the consistency and accuracy of the test.

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INTRODUCTION

Myofacial pain dysfunction syndrome is the most frequent temporomandibular disorder[1]. This syndrome primarily influences the masticatory muscles and leads to pain, limitation of jaw movement and functional disability.

Temporomandibular arthralgia encompasses musculoskeletal disorders affecting the temporomandibular joints (TMJs) and their associated musculature . It is a collective term which represents a diverse group of pathologies involving the temporomandibular joint, the muscles of mastication, or both. Pain is the defining feature in temporomandibular disorders (TMD) and the primary reason for seeking care. It also may involve joint noises and/or restricted jaw function.

The primary intervention for pain in patients with TMD is the use of pharmacotherapy. The aim of pharmacotherapy is not curative but rather to aid the patients in managing the dysfunction and discomfort which occurs as the result of suffering from such a chronic disorder.

It is also the primary intervention because many of the surgical and dental therapies for TMD are not scientifically proven to be effective. A wide range of pharmacotherapeutic agents are used for TMD. However there is insufficient evidence whether these provide any benefit over placebo.

Non-surgical managements include reassurance, patient education, pharmacotherapy, occlusal therapy, physiotherapy, behavioural therapy and psychotherapy. Surgical treatments include arthrocentesis, arthroscopy and arthrotomy.

Aim

To study the effect of NSAIDs' in acute MPDS and NSAIDs' with SSRI in chronic MPDS using the universal tool for pain assessment before and after treatment and to assess the age ,sex prevalence of the disorder.

Objectives Of The Study

- To assess the pain relief obtained in acute and chronic cases of temoporomandibular disorders with NSAID's alone and NSAID's and SSRI's respectively as measured

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by severity assessment scale for pain before and after treatment.

- To study the occurrence, age and sex distribution of temporomandibular disorders.

REVIEW OF LITERATURE

A number of reports and case studies have shown direct effect of analgesics, tricyclic antidepressants and SSRI's on pain relief in temporomandibular disorders.[2]

According to the Weinberg, the etiology of TMJ disorders can be divided into four types: stress, occlusion, condylar displacement within the fossae, and anterior displacement of the disk[3]

Some epidemiological studies suggest that 40 to 75 percent of general population may present at least one symptom during their life[4].

Women are more affected than men. Although occlusal and psychological disorders are more distinguished in these patients, studies have shown that only in 10 to 20 percent of cases, there is a causative relation between occlusal disorder and temperomandibular pain[5]. The implication of stress as a part of psychiatric considerations for TMJ complaints was proposed where it was indicated that tension and emotional stresses increase the severity of the symptoms[6].

The role of stress in temporomandibular joint (TMJ) dysfunction syndrome has been confirmed in many researches [6]. In contrast, few other studies found no differences between depression rates in orofacial pain patients and normal controls.
Stressful events such as challenges in private and occupational life, financial problems, cultural and ethical differences all can play a trigger role in emanating pain and other symptoms of the disease.

A number of studies have assessed the effectiveness of pharmacotherapy in the management of this condition[7].

Nonsteroidal anti-inflammatory drugs (NSAIDs), usually are a class of drugs that provides analgesic (pain-killing) and antipyretic (fever-reducing) effects, and, in higher doses, anti-inflammatory effects.

The term *nonsteroidal* distinguishes these drugs from steroids, which, among a broad range of other effects, have a similar, anti-inflammatory action.

The most prominent members of this group of drugs are aspirin, ibuprofen, diclofenac and naproxen, are all available over the counter in most countries[7].

Paracetamol (acetaminophen) is not considered an NSAID because it has little anti-inflammatory activity. It treats pain mainly by blocking COX-2 receptor mostly in the central nervous system, but not much in the rest of the body.

NSAIDs inhibit the activity of both cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2), and thereby, the synthesis of prostaglandins and thromboxanes[7].

It is thought that inhibiting COX-2 leads to the anti-inflammatory, analgesic and antipyretic effects and that those NSAIDs also inhibiting COX-1, particularly aspirin, may cause gastrointestinal bleeding and ulcers.

Analgesics have been usually indicated for the treatment of chronic temporomandibular disorders but may not suffice alone in many cases**.**[6]

Some studies have reported that Benzodiazepines, especially clonazepam and alperazolam, are the drugs of choice in muscular spasm coexisting with anxiety with chronic pains [8]. Turp and Eisele suggested the use of clonazepam, diazepam, amitriptyline, and meprobamate in the treatment of muscular pain dysfunction syndrome [9].

The efficacy of fluoxetine in the treatment of depression, chronic pain, neuropathic pain, fibromyalgia, and even headache has been confirmed by many researchers such as Calil, Kusstarica, Rossi, Guri and others[10].

Fluoxetine is an antidepressant of the selective serotonin reuptake inhibitor (SSRI) class which is approved for the treatment of major depression , obsessive-compulsive disorder, bulimia nervosa and panic disorder . Despite the availability of newer agents, fluoxetine remains extremely popular[11]**.**

Fluoxetine affects chemicals in the brain that may become unbalanced and cause depression, panic, anxiety, or obsessive-compulsive symptoms.

Fluoxetine is sometimes used together with olanzapine to treat depression caused by bipolar disorder (manic depression).

Regarding these evidences, and high rate of depression and anxiety in patients suffering from MPDS, clonazepam, and fluoxetine (selective serotonin re-uptake inhibitor) can be prescribed to control anxiety, depression and MPDS symptoms.

Antidepressants have an antinociceptive effect on chronic pain independent of antidepressant effect.[6]

In past tricyclic antidepressants were considered the gold standard in treatment of different kinds of neuropathic pain as studies showed their superiority compared to other available drugs.[5]

There have been studies demonstrating tricyclic antidepressants were efficient in significantly decreasing pain and discomfort that arises from chronic temporomandibular disorders[7].

However with tricyclic antidepressants, a large number of side effects are observed which although not life threatening, significantly affects patients quality of life, causing a limitation of tolerability.

Common side effects: dry mouth, sedation, memory impairment, constipation, orthostatic hypotension.[6]

As per research diagnostic criteria, a psychological component of temporomandibular joint arthralgia was elicited in Index II of research diagnostic criteria[12].

There came the importance of SSRI's in the treatment of temporomandibular arthralgia.

Patients who are intolerant to tricyclic antidepressants may be treated with SSRI's.[9]

It is suggested that SSRI induced antinociception involves both central and serotonergic pathways.[9]

SSRI'S are now rapidly replacing tricyclic antidepressants in the treatment of temporomandibular disorders.[9]

Citalopram; brand names: **Celexa**, **Cipramil**) is an antidepressant of the selective serotonin reuptake inhibitor(SSRI) class. It has U.S. food and drug administration (FDA) approval to treat major depresion which it received in 1998 and is prescribed off label for other conditions. A meta analysis, including studies with fluoxetine, paroxetine, sertraline, escitalopram and citalopram versus placebo, showed that SSRIs are effective in reducing symptoms of myofacial pain disorder syndrome.

MATERIALS AND METHODS

Source Of Data

The present study was conducted on the patients visiting the outpatient department of otorhinolaryngology department of Father Muller Medical College, Mangalore.

Method of Sample Collection

This was an observational, double blinded, and randomized controlled trial. In this clinical trial patients diagnosed as having acute or chronic MPDS as per Research Diagnostic Criteria and undergoing treatment were assessed for pain as per severity assessment scale before treatment. We have kept the sample size to be 60 of which 30 were patients with acute MPDS and 30 with chronic MPDS. Patients with symptoms of less than three months duration were diagnosed as acute MPDS and patients with duration more than three months were diagnosed as chonic MPDS.

Patients with acute MPDS were treated with diclofenac 50 mg twice daily for one week and reviewed after one week. Patients with chronic MPDS were treated with citalopam 10 mg once daily and analgesics on s o s basis and reviewed after four weeks..Patients were assessed about degree of the pain relief after treatment using the same scale. The patients' pain experience measured by means of the universal pain assessment tool was as follows: 0=no pain, 1 ≤4 as mild pain, 4 ≤7 as moderate pain, 7 ≤9 as severe pain, and 10=very severe pain. Maximal painless mandibular opening was defined as the vertical distance between the upper and lower incisal edge of anterior teeth and measured with culis.

According to Okeson index, the maximum painless mandibular opening is 40 mm, thus, lower results were considered as a limitation of mandibular opening[3]. Helkimo considered mandibular opening in the range of 30 to 39 mm as mild limitation, and lower than 30 as severe limitation[13]. Our criteria for improvement was defined as total omission of pain and tenderness in masticatory muscles (pain scale=0).

Inclusion Criteria

- Patients with facial ache or pain in muscles of mastication, temporomandibular region, in front of ear or inside the ear
- Positive clinical diagnosis of temporomandibular disorders, diagnosed using axis I of research diagnostic criteria[12] which consists of pain at rest, spontaneous pain and evoked pain on palpation of temporomandibular joint and joint reduction consists of reciprocal clicking or joint noise with derangement of mandibular movement

Exclusion Criteria

- Subjects with infectious arthritis, arthropathies and musculoskeletal disorders.
- Subjects with pain attributable to confirmed migraine or head pain or condition other than tension headache**.**
- Subjects with untreated depressive disorder or not on stable antidepressant medication for more than 6 months.
- Subjects with dental diseases that required ongoing treatment which would confound the evaluation of orofacial pain.
- Pregnant or lactating women.

Statistical Analysis

It is a prospective study where the severity of symptoms in patients is assessed before and after treatment and age sex prevalence of the disorder is calculated using mean, frequency standard deviation and paired t test.

RESULTS

MPDS was more prevalent in females in our study (82.1%). The average age was 35 years (SD=13.3). The mean maximal mandibular opening was 35.4 mm (SD=7.01). According to Okeson index[3], 71.8% (28 patients) were suffering from limitation of mandibular opening in the first visit before starting the treatment, and also 61.5% (24 patients) were suffering from mild limitation, and 10.3% (4 patients) from severe limitation[13] (Helminko index). Most of our patients (89.7%) were cured without any occlusal therapy. Tenderness of masticatory muscles was decreased gradually after starting the treatment. Pain in palpation of TMJ was reported by 54% of patients at first visit that was completely improved after treatment course . Kolomogrov-Smirnov test analyze and t. test revealed that maximal painless mandibular opening have been increased in the patients after the fourth visit (third month). None of these patients reported of any side effects specifically pertaining to these drugs.

DISCUSSION

In our study the total number of participants including acute and chronic patients were 60 of which 80% were females. This is in agreement with the findings of previous study by Mc Neil Kimos and Tchichivilela where the total number of participants in all of the included studies was 496 of which 83% were female[14]. This shows that TMD is more common im women than men. This may be related to lower tolerance of women to pain, more stressful life, and higher prevalence of psychological problems among.

For chronic musculoskeletal pain it was shown that on a numerical rating scale (10- cm horizontal line with descriptors 'no pain' on the left and 'worst possible pain' at the far right) a change of score of -2.0 cm and a per cent change score of -33% were best associated with the concept of 'much better' improvement on the pain relief as a clinically important outcome (Salaffi 2004). Only studies by Kimos for 10 cm VAS scale and for the 10-point numerical analogue scale showed such clinically important differences[14]. In our study we have assumed a pain relief of more than 50 % to be substantially important treatment outcome. In studies conducted so far, the minimum trial duration was 7 days , maximum 12 weeks and median 4 weeks and it may be too short an evaluation period

for a chronic condition[14]. In our study the duration of treatment was kept 7 days for acute and one month for chronic TMJ arthralgia. In the study by Ta and Dionne 2004, naproxen was administered at a dose of 500 mg twice daily for 6 weeks and had the most significant pain reduction of all the drugs. None of the adverse effects were reported as severe and there were no drop outs from the study as a result[14]. In our study we have used diclofenac at a dose of 50 mg daily for one week for acute MPDS and citalopam 10 mg once at night for three months for chronic MPDS with use of NSAIDS only for acute exacerbation of pain. Our study revealed that the use of citalopam (regardless of psychological disorders) results in complete improvement in 90% of the patients, without performing any occlusal therapy. It is clear that there is an association between pain feeling and depression. Indeed it has been suggested that painful symptoms might be an integral part of depression and that major depression should be considered as a disorder characterized by a triad of psychological, somatic symptoms and painful physical symptoms [15]. It has been shown that chronic pain and depressive disorders share some common pathophysiology[14] . The clinical overlap of pain and depression has been explained with the anatomical coincidence of both nociceptive and affective pathways.

Table showing female preponderance of acute MPDS

	Frequency	Percent
Female	24	80.0
Male	6	20.0
Total	30	100.0

Table showing significant pain reduction in acute MPDS after treatment with NSAIDs'

	N	Minimum	Maximum	Mean	Std. Deviation	Median	Change (%)	Mann-whitney test p
Before	30	3	7	5.10	1.252	5.00	72.55	p=0.000<0.001, HS
After	30	0	2	1.40	.681	1.50		

Table showing prevalence of acute MPDS in middle age

	N	Minimu	Maximu	Mean	Std. Deviat
Age	20	17	60	33.95	11.41

Complications seen in patients undergoing treatment with NSAIDs'

	Frequency	Percent
Excessive sleepiness	3	10.0
Gastritis	7	23.33
Giddiness	3	10.0
Nausea	3	10.0
NIL	14	46.67
Total	30	100.0

Table showing female preponderance of chronic MPDS

	Frequency	Percent
Female	25	83.33
Male	5	16.67
Total	30	100.0

Table showing preponderance of chronic MPDS in middle age

	N	Mininum	Maximum	Mean	Std. Deviation
age	30	15	60	34.15	15.184

Table showing complications of treatment with SSRI in chronic MPDS

	Frequency	Percent
Gastritis	3	10.0
Heart burn	2	6.67
Nausea	4	13.33
Nausea, vomiting	3	10.0
NIL	18	60.0
Total	30	100.0

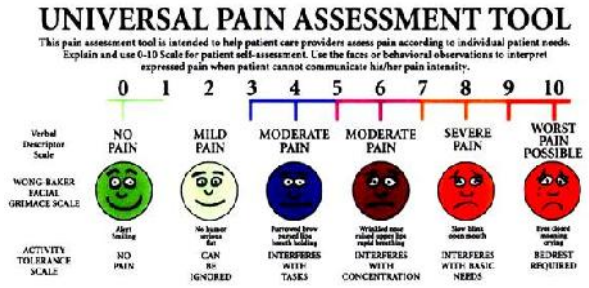

Figure 1 Pain Scale For Assessment Of Severity Of Symptom In Mpds.

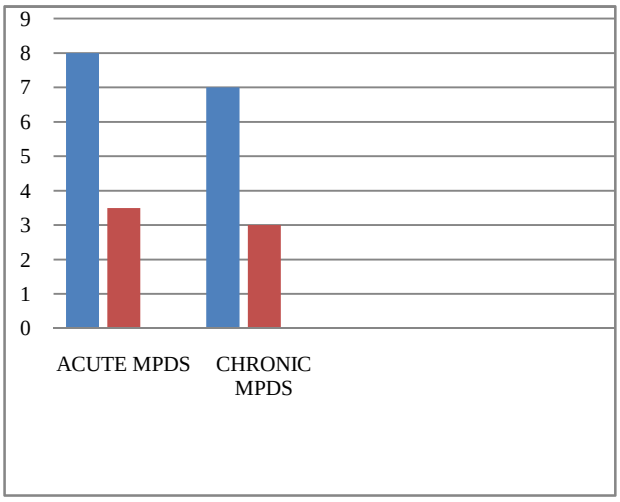

Figure 2 bar Diagram Depicting Pain Scale before and after Treatment

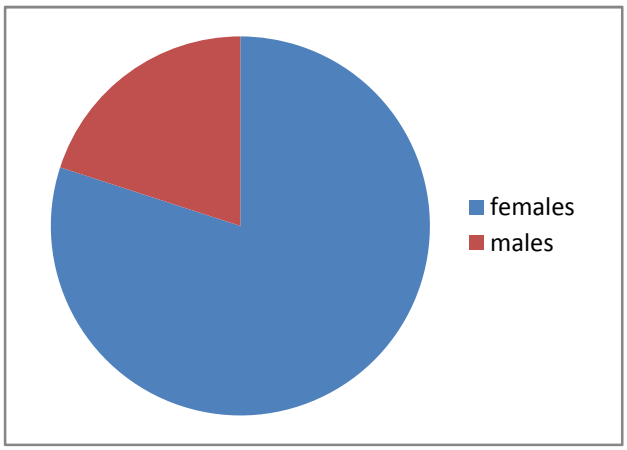

Figure 3 Pie chart showing female preponderance of mpds.

Table showing significant pain reduction in pain after treatment with SSRI in chronic MPDS.

	N	Minimum	Maximum	Mean	Std. Deviation	Median	Change %	Mann whitney test p value
Before After	30	4	8	5.85	.933	6.00	82.91	p=0.000<0.001, HS
	30	0	3	1.00	.858	1.00		

Norepinephrine and serotonin, the two neurotransmitters most implicated in the pathophysiology of mood disorders, are also involved in the gate-control mechanism of pain[16], and ntidepressants have been found to have an effect on chronic pain[16]. Limitation of mandibular opening is a frequent finding in MPDS, which has been noticed in 71.8% of our cases. According to the result of this study, although the pain in masticatory muscles follows a downward trend after starting of the treatment, maximal painless mandibular opening had not been changed before the fourth visit, therefore, it is assumed that minimum length of time for improvement in the function and efficacy of masticatory muscles is 3 months and then efficacy of treatment will be more profound. This study weakens the role of occlusion in the etio-pthogenesis of MPDS as 90% of our patients improve without any occlusal therapy. The aim of this study was to achieve an effective treatment for MPDS without any occlusal treatment. Our study showed that 89.7% of our patients improved completely.

CONCLUSION

This study concludes that MPDS is more common in women.The treatment of psychological problems seems to be the high priority. NSAIDS are efficient and effective in treatment of acute MPDS and will be the first line drug for acute myofascial pain. SSRI'S are effective in controlling chronic symptoms of MPDS without any adverse effects.

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