

SWD in OA knee: What do we believe -A narrative review

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Abstract

Aim: Osteoarthritis of knee joint is a common condition in India leading to various dysfunctions around the knee joint, restricting physical activities of patient and his/her participation in social function. In Physiotherapy, a wide range of management options are available for this condition. Electrical modalities and therapeutic manoeuvres are basic choices. There is always uncertainty regarding use of electrical agents over therapeutic manoeuvres as the latter is recent, wildly accepted and practised option by physiotherapy population. Hence the aim for this review is to find out the evidence for effectiveness of SWD in treatment of knee osteoarthritis.

Methodology: The evidences are collected with the help of search engines like Google Scholar, PUBMED, Cochrane, ReasearchGate. The evidences include original scientific papers, randomised controlled trials, systematic reviews and meta-analysis

Results: The evidence supports the use of SWD for pain relief in knee osteoarthritis. But it does not support the effectiveness of SWD in treating other dysfunctions like swelling, reduced mobility, impaired physical or social functions

Conclusion: SWD can be effectively used as an adjunct with other therapeutic options in treatment of knee osteoarthritis.

Keywords: Osteoarthritis, electrical modalities, short wave diathermy

Introduction

Osteoarthritis of knee joint is one of the common cause of morbidity and functional limitations in India. The prevalence of OA in India is 21% [1,2] that too affecting females more than males. The contributing barriers for this condition in India are postures taken (cross legged, lady sitting, squatting) for cultural, religious activities, obesity and lifestyle (staircase climbing, sitting cross legged for lunch, dinner). The abnormal stresses coming on knee joint because of above mentioned factors lead to early wearing out of articular cartilage and degeneration with onset of uni/ bi or tri compartmental syndrome. It directly affects the daily activities of the individual as well as his participation in job and in society. This increases total burden on society. Hence early detection and effective management of this condition is always the challenge in front of health professionals.

In physiotherapy, the management of OA knees has evolved over the years. The basic managements include electrotherapy and therapeutic manoeuvres. It aims at relieving

pain, improving arthrokinematic movements and developing motor controls in muscles around knee joints and local stabilisers like core muscles. For relieving pain therapeutic agents like heat, cold, medium frequency currents, low frequency currents and high frequency currents are used depending upon impairments to be tackled. Eg. Pain, swelling (IFT) (EMS), localised pain(US), acute inflammation (luminous IR, ice).

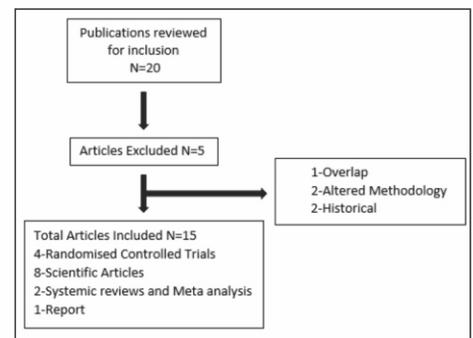
The SWD has always been the treatment of choice because of technique used to deliver magnetic fields (cross fire technique) which covers all the boundaries of uneven knee joints.

As far as the therapeutic manoeuvres are concerned, they include various mobilisation techniques. Exercises for selective activation of muscles, dealing with tight structure like TFL, releasing trigger points, tape application to correct alignment of pallela or for facilitation of inhibited muscles. So options available for electrotherapeutic modalities or exercise modalities as a management of OA displays a large range for each individual and thus the question arises that one of the electrotherapeutic agent SWD, which has been widely used as an option since a long time, is worth using or not, as recently PT population believes that all impairments can be effectively dealt with therapeutic manoeuvres.

Methodology

For this review, the evidence of use of SWD as a treatment modality for OA knee is gathered through various search engines like Google Scholar, PUBMED, Research Gate, Cochrane etc. (as shown in table)

The data collected was organised and



synthesized to come to the consensus of use of SWD in treatment of OA knee.

Discussion

The evidence supports that the SWD is a modality used to treat various impairments around the knee joint since very long time. one historical documents³ (in 1982) have experimental effects of SWD on rabbits also for mobility and radiological changes. There are few research trials performed in 2000-2012.

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The scientific research is done comparing SWD with other modalities in OA treatment like US, THS and superficial thermal agents like hot packs and cold packs.⁴

The results of these showed efficacy of SWD in reducing pain, increasing range of motion and function, whereas one study concluded that there is no additional effect of SWD over EXS programme for OA knee in pre/postmenopausal women⁵

Out of 4 randomised controlled trials included in review, one trial showed decrease in pain and disability index and increase in muscle strength and angular velocities and concluded that using physical agents (SWD/US/TNS) before isokinetic exercises leads to augmentation of performance, decrease in pain and improved function⁶.

Other trial confirms that joint inflammation in OA knee measured by radiolucosinlegraphy was not altered significantly by pulsed SWD⁷. 2 RCTs done in 2012 concluded that^{8,9}

1) Deep heat therapy via microwave diathermy improves pain muscle strength and function which was not achieved by superficial heat therapy

2) Pain and function in OA knee improved with all the three multi-centred electrotherapeutic agents that is SWD, TNS and ICT and reduced (paracetamol) analgesic intake and thus combination of physical agent EXS and education programme results in best outcome in OA knee points

One Systematic Review (2012)

SWD appears to be effective in decreasing pain and increasing muscle strength in patients with OA knee. However effect is observed immediately post treatment and effects are lost by 12 weeks whereas athermal effect of SWD is not beneficial.¹⁰

This meta-analysis found “small, significant effects on pain and muscle performance only when SWD evoked a local thermal sensation. However, the variability in the treatment protocols makes it difficult to draw definitive conclusions about the factors determining the effectiveness of SWD treatment” Thus the evidence till 2012 was non-conclusive to support the use of SWD for treating impairments of knee osteoarthritis.

On this background one strong and recent evidence in the form of systematic review and meta-analysis on SWD in patients with knee osteoarthritis published in 2016 is useful to answer our research question¹¹. As mentioned by authors “The most crucial reason for this updated review was- OA research Society International guidelines for non surgical management of knee osteoarthritis in 2014 did not mention SWD at all”. 8 studies were included for qualitative and quantitative analysis by stringent inclusion criteria.

This meta-analysis extracted the clinical message that

1. SWD is beneficial for relieving pain in knee osteoarthritis
 2. Pulsed mode SWD seems superior to continuous modality
 3. SWD increases knee extensor strength
- It also commented that SWD is a safe modality to use as no adverse effects were observed.

Conclusion

Thus SWD pulsed/ continuous can be used as adjust to relieve pain in patients of knee osteoarthritis. There is no substantial evidence to prove effectiveness of SWD on impairments like swelling, or improving flexibility of soft tissues around knee joint or physical function. Moreover studies in available evidence do not support the sustenance of effects obtained by SWD beyond three months.

But as it is rightly said “The absence of evidence is not the evidence of absence” There is a scope for further research in the above areas. In a public/ governments setup where there is large number of patients of osteoarthritis to be dealt with available human resources, SWD can be a time saving option to get pain relief. Obviously, it cannot be the only treatment but can be used as an effective adjunct along with other techniques like mobilisation techniques or muscle specific exercise techniques.

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