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Extracorporeal Shockwave Therapy in Oa Knee

Dr. Satya Kumar Koduru, Dr.Pavan Kommineni, Dr. Ram Gopal
Prof & Head Of Orthopedics,Nri Academy Of Sciences,Andhra Pradesh.
Asst.Prof. Of Orthopedics, Nri Academy Of Sciences,Andhra Pradesh
Junior Resident,Department Of Orthopedics, Nri Academy Of Sciences,Andhra Pradesh

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ABSTRACT
EXTRACORPOREAL SHOCKWAVE THERAPY IN OA KNEE
Introduction :Extracorporeal shockwave therapy has been widely used for pain relief and treatment of musculoskeletal disorders. We aimed to assess ESWT for osteoarthritis of knee.
Objective :To find out the potential of Extracorporeal shockwave therapy in early degenerative disease of knee.
Inclusion criteria:1.Kellgren-Lawrence grade 1 to grade 3 Osteoarthritis 2.Primary Osteoarthritis 3.Pain atleast for 3 month 4.Age between 45 & 60years.
Exclusion criteria: 1.Kellgren-Lawrence grade 4 osteoarthritis 2. Secondary osteoarthritis 3. Coagulation disorders 4. Immunodeficiency patients 5. Pregnant women 6. Uncontrolled diabetes Materials &methods :The study period was from December 2021 – November 2022, 15 females & 05 males were recruited for the study.Age group between 45 to 60years were enrolled.We analyzed all the 20 cases at the end of 12months.WOMAC/KSS/VAS scores were taken on the day of starting of the study &results were mainly based on these scores.Results:Based on WOMAC/KSS/VAS scores Stage1,2 &3 had excellent results for 12 months.Follow up done for 12months.**DISCUSSION**: ESWT is a non-invasive method that uses acoustic waves to treat various musculoskeletal conditions (9) .It promotes neovascularization at the tendon- bone junction, stimulate proliferation of tenocytes and osteoprogenitor differentiation,increase leukocyte infiltration, and amplifygrowth factor and protein synthesis to stimulate collagen synthesis and tissue remodelling (10,11) These waves create compression and shear loads on the surface of the material.this rapid interaction between compression and shear forces results in cavitations. this is the basic principle behind ESWT (12) It helps in healing, improves blood supply, and helps in pain reduction.**CONCLUSION** : Our ESWT is an alternative treatment or in few cases a definitive treatment in degenerative disease of knee joint. Our study has less number of cases with a short term followup,we need more number of studies to consider this procedure as an alternative treatment for early degenerative condions of knee joint.
KEY WORDS – Eswt,Shockwave,Regeneration,Oa Knee

I. INTRODUCTION

Osteoarthrosis (OA) of knee is the most common form of arthritis, affecting approximately 302 million people worldwide, and is a leading cause of disability among older adults.(1). As OA spans decades of a patient's life, patients with OA are likely to be treated with a number of different pharmaceutical and nonpharmaceutical interventions, often in combination.Extracorporeal shockwave therapy has been widely used for pain relief and treatment of musculoskeletal disorders. We aimed to assess ESWT for osteoarthritis of knee. Extracorporeal shock wave therapy (ESWT) is a non-invasive non-surgical method,which was applied in the treatment of OA knee in recent years. Scholar Zhao carried out a clinical study on OA knee treated with ESWT in the world, and the results suggested good therapeutic effect with no major adverse reactions. He used shockwaves of 4000 pulses in total were applied at 0.25 mJ/mm2 and a frequency of6 Hz/s. (6,7)The mechanisms of action may be attributed to one of the following aspects. ESWT by acting on the subchondral bone, delay the structural changes in it, and hence suppress the degenerative changes in cartilage. ESWT affects some mechanical sensitive signalling pathways in the chondrocytes, thus accelerating proliferation and delaying its degeneration. Another hypothesis is that osteoporosis(OP) is closely associated with osteoarthritis, and the interaction between them may promote the genesis and development of these two. (8) ESWT may improve the bone density in patients with osteoporosis, thus improving the symptom.

Objective :To find out the potential of Extracorporeal shockwave therapy in early degenerative disease of knee.

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Exclusion criteria:
1.Kellgren-Lawrence grade 4 osteoarthritis
2. Secondary osteoarthritis
3. Coagulation disorders
4. Immunodeficiency patients
5. Pregnant women
6. Uncontrolled diabetes

Materials &methods : The study period was from December 2021 – November 2022
15 females & 05 males were recruited for the study. Age group between 45 to 60years were enrolled.
All the patients were asked to attend a formal meeting & explained about the study we are going to perform on them & after taking consent from 20 cases we started doing the study from December 2021
We analyzed all the 20 cases at the end of 12months.
WOMAC/KSS/VAS scores were taken on the day of starting of the study &results were mainly based on these scores.

PRE THERAPY SCORES	
WOMAC	82
KSS	59.9±13.5
VAS	8/10

Methodology – weekly 3 sessions on every alternate day, ESWT(8x2.5HZ) given for 3 weeks.
No analgesics were given, asked obese cases to lose weight & asked all the cases to do regular quadriceps exercises, avoid using steps & Indian toilets.
Local application of analgesic gels were allowed along with hot packs for pain.
Occasional Paracetamol 1000mg was advised.
Maximum of 09 sessions were given. same protocol was followed for all the cases.

Results: Based on WOMAC/KSS/VAS scores. Overall results based on the above gave good to excellent results for 12 months

POST THERAPY SCORES				
DURATION	03 MONTHS	06 MONTHS	09 MONTHS	12 MONTHS
WOMAC	0	0	10-15	20-30
KSS	69.3±16.8	78.2±10.0	80±6.8	87.9±11.1
VAS	2/10	0/10	0/10	2/10

II. DISCUSSION

ESWT in degenerative arthritic condition :ESWT is a non-invasive method that uses acoustic waves to treat various musculoskeletal conditions [(9)].It promotes neovascularization at the tendon-bone junction, stimulate proliferation of tenocytes and osteoprogenitor differentiation, increase leukocyte infiltration, and amplify growth factor and protein synthesis to stimulate collagen synthesis and tissue remodelling [(10,11)].

These waves create compression and shear loads on the surface of the material.
this rapid interaction between compression and shear forces results in cavitations.
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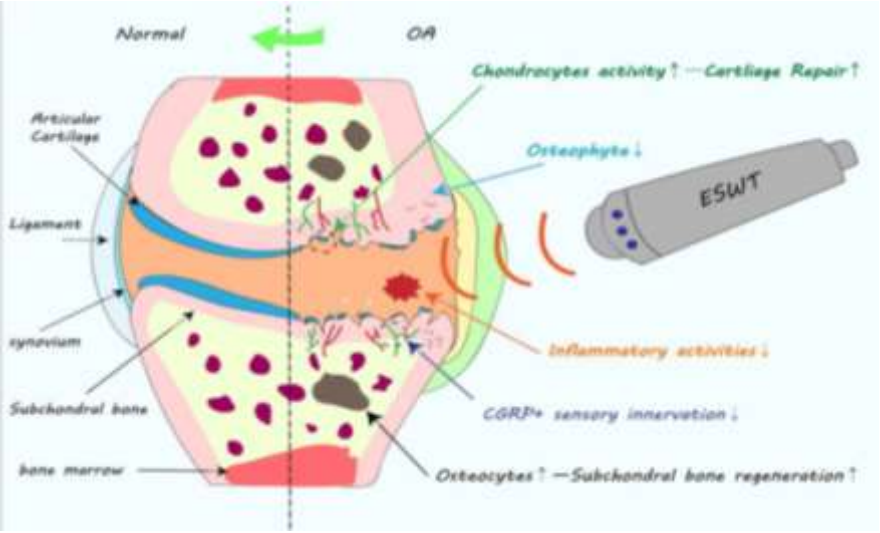
FIG - EFFECTS OF ESWT ON ARTHRITIC KNEES



III. CONCLUSION

Our ESWT is an alternative treatment or in few cases a definitive treatment in degenerative disease of knee joint. Our study has less number of cases with a short term followup,we need more number of studies to consider this procedure as an alternative treatment for early degenerative conditions of knee joint.

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