INTEGRATIVE NONPHARMACOLOGIC MANAGEMENT OF KNEE OSTEOARTHRITIS PAIN IN AN ELDERLY PATIENT : A CASE REPORT

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INTRODUCTION

- Osteoarthritis (OA) is the leading joint disorder globally[1], contributing to rising levels of disability and increased demand on healthcare systems[2].
- Approximately 595 million people worldwide were living with osteoarthritis in 2020, accounting for 7.6% of the global population. This represents a 132.2% increase in total cases since 1990.[3]
- Despite the importance of conservative non-pharmacological strategies, only 40 to 65% of Knee Osteoarthritis (KOA) patients receive appropriate treatment [4]indicating that evidence-based guidelines are still underutilized.
- Through this case, we aim to draw attention to the evidence-based benefits of non-pharmacological therapies in osteoarthritis management.

CASE PRESENTATION

- An 82-year-old woman with PMH of diabetes, Hypertension, BMI - 32 kg/m², bilateral KOA presented with constant knee pain, 8/10 in intensity.
- She had previously tried acetaminophen and an NSAID with limited benefit; NSAIDs were discontinued due to GI upset.
- On examination, she had bilateral medial and lateral joint line tenderness, crepitus, and a 10° loss of knee flexion.
- Radiographs revealed findings consistent with Kellgren-Lawrence grade 3 OA in both knees.
- Given her interest in nonpharmacologic options to avoid the need for stronger pain medications and her history of GI upset, a **multimodal integrative treatment plan** as detailed in the table was implemented.
- After 3 months of treatment, the patient's **WOMAC pain score** decreased by more than 36% (from 16 to 8 out of 20).
- She reported a reduction in pain intensity from 8/10 to 4/10 and an improvement in walking endurance from 10 to 30 minutes.
- Her knee flexion improved by 5°, and timed "Up-and-Go" testing improved from 14 to 10 seconds.
- The patient discontinued acetaminophen altogether by 4 months.
- At 6-month follow-up, gains were maintained with ongoing exercise and diet adherence.

DIAGNOSIS AND ASSESSMENT OF KOA

Kellgren-Lawrence scale: Radiological grading used to classify the severity of KOA based on joint space narrowing, osteophytes, sclerosis, and bone deformity on x-ray.

- **WOMAC**: Patient-reported outcome measure to evaluate pain and physical function. Scores range from 0 to 100 depending on the scale used.
- **Timed Up and Go (TUG) Test**: Assesses functional mobility.The individual is timed while standing up from a chair, walking a short distance, turning around and sitting down on the chair again.
- **Knee Flexion Angle during Walking:** Gait analysis of peak knee flexion during walking, which correlates with the severity of KOA.

MULTIMODAL INTEGRATED TREATMENT PLAN FOR KOA

Complementary therapy:

- **Acupuncture**: 10 sessions over 3 months using standardized knee-point needling (once weekly); aimed at pain modulation

Exercise therapy:

- **Yoga**: 5 times per week for 8 weeks; improves flexibility, balance, and pain reduction
- **Aquatic Exercise:** 2–3 times/week for 8–12 weeks in water at 33.5°C–35.5°C; reduces joint load and improves mobility
- **Tai Chi:** 2–5 times/week for 8–12 weeks or longer; 45–60 minutes per session; enhances balance and reduces stiffness

Dietary intervention:

- **Mediterranean diet counselling:** Anti-inflammatory focus; increased fruits, vegetables, whole grains, olive oil, fish; reduce red meat/refined carbs
- **Weight loss:** A gradual 5% reduction in body weight, set with the guidance of a dietitian.

Pain management:

- **Acetaminophen (Tylenol)**: Continued as needed; no addition of opioids or NSAIDs

Education & Self-management:

- **Patient education:** Ongoing counseling on chronic pain coping, pacing strategies, and adherence to treatment

DISCUSSION

- In our 82-year-old patient with severe KOA, NSAID intolerance due to GI side effects and ineligibility for surgery, prompted initiation of a non-pharmacological integrative approach. This regimen led to marked improvements in walking endurance, knee flexion, and eventual cessation of analgesic use.
- A 4-year longitudinal study by Veronese et al. found that greater adherence to the Mediterranean diet significantly reduced pain progression in symptomatic KOA, though it had no effect on radiographic outcomes[5] Acupuncture, acting via gate control and neurochemical pathways, has shown efficacy in recent RCTs[6]. However, global consensus remains limited due to variable clinical results across studies.
- According to a systematic review and meta-analysis of RCTs, yoga, aquatic exercise, and Tai Chi all showed positive effects on managing symptoms of OA, particularly in older adults[7]

CONCLUSION

- This case supports current recommendations favouring non-drug management as first-line treatment in KOA.
- It also highlights the need for large-scale studies to evaluate non-pharmacologic strategies while considering patient-specific variables such as age and comorbidities.
- It reinforces the importance of multidisciplinary collaboration, increased physician awareness, and investment in quality improvement to expand access to evidence-based non-pharmacological care.

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