

## Knee Osteo Arthritis - A Review of Literature

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www.jrasb.com || Vol. 4 No. 1 (2025): February Issue

Received: 03-02-2025

Revised: 11-02-2025

Accepted: 16-02-2025

### ABSTRACT

Knee osteoarthritis (OA) is a common degenerative joint disorder characterized by progressive cartilage degradation, subchondral bone changes and inflammation, resulting in pain, stiffness, and functional impairment. It is a leading cause of disability, particularly among older adults, although younger individuals may also be affected due to factors such as injury, obesity, or genetic predisposition. Conventional management includes non-pharmacologic interventions (e.g., physical therapy, weight management), pharmacologic treatments (NSAIDs, corticosteroids, hyaluronic acid injections) and surgical options in advanced cases. In recent years, interest in complementary and alternative therapies, such as homeopathy, has grown as part of a holistic approach to managing knee OA. Homeopathy aims to treat the individual holistically, focusing on symptom relief and improving quality of life, with remedies such as *Arnica montana*, *Rhus tox* and *Bryonia alba* etc are commonly used for pain, inflammation, and joint stiffness. This article reviews the pathophysiology, diagnosis, and homeopathic treatment strategies for knee OA, while also exploring the role of homeopathy in managing the condition.

**Keywords-** Knee osteoarthritis, homeopathic treatment, pain management.

## I. INTRODUCTION

Osteoarthritis (OA) of the knee, also known as degenerative joint disease, is often brought on by a slow loss of articular cartilage as a result of wear and stress. It is a major cause of impairment worldwide, and it is most common in older adults. Knee osteoarthritis can be divided into two types which are – Primary and Secondary.

Arthrodial degradation with no apparent underlying cause is known as Primary osteoarthritis one of the two main causes of secondary osteoarthritis is either abnormal articular cartilage, such as in rheumatoid arthritis (RA) or an aberrant concentration of force across the joint, as in post-traumatic causes. Usually, osteoarthritis progresses over time and can eventually cause disability. Each person may experience the clinical signs at a different intensity. But over time, they usually get worse, happen more often, and become more

incapacitating. Also, each person's rate of advancement differs. Common clinical signs include knee stiffness and swelling, discomfort after extended sitting or sleeping, pain that gradually gets worse and pain that gets worse with time. When conservative treatment fails, surgical treatments are considered as a further step in the management of osteoarthritis in the knee. Although drugs can help RA and other inflammatory diseases grow more slowly, there are presently no effective disease-modifying treatments for treating osteoarthritis in the knee.<sup>(1,2,3)</sup>

## II. ETIOLOGY

Anatomical characteristics, age, gender, obesity, muscle weakness, and joint injury from sports or work are risk factors for osteoarthritis (OA).

In the absence of an illness or trauma that predisposes the patient, primary OA is the most

prevalent subtype of the condition and is linked to the above risk factors.

There is an underlying joint problem that leads to secondary OA. Trauma or damage, malposition (varus/valgus), Scoliosis, Rickets, Hemochromatosis, Chondrocalcinosis, Ochronosis, Wilson disease, Gout, Pseudogout, Acromegaly, Rheumatoid arthritis, Infectious arthritis, Inflammatory arthritis, Psoriatic arthritis, Hemophilia, Congenital joint diseases, Avascular necrosis, Paget disease, Osteochondritis dissecans, Metabolic disorders (Hemochromatosis, Wilson's disease), Hemoglobinopathy, Ehlers-Danlos syndrome, or Marfan syndrome are among the predisposing conditions. <sup>(4,5)</sup>

### III. RISK FACTORS FOR KNEE OA

#### Modifiable

- Articular trauma
- Occupation – prolonged standing and repetitive knee bending
- Muscle weakness or imbalance
- Weight
- Health – metabolic syndrome

#### Non-modifiable

- Gender - females more common than males.
- Age
- Genetics
- Race

### IV. EPIDEMIOLOGY

As life expectancy and obesity rise, the prevalence of knee osteoarthritis, the most common type of arthritis, will continue to rise. Roughly 10% of men and 13% of women aged 60 and beyond, respectively, have osteoarthritis in their knees that causes symptoms. As much as 40% more people over 70 have the condition than younger people. Men also have a lower prevalence of osteoarthritis in the knee than do women. Surprisingly, not every person with radiographic evidence of osteoarthritis in the knee will experience symptoms. According to one study, only 15% of participants with radiographic evidence of osteoarthritis (OA) had symptoms. The annual incidence of symptomatic knee osteoarthritis, without age adjustment, is about 240 cases per 100,000 persons. <sup>(6,7)</sup>

### V. PATHOPHYSIOLOGY

OA is characterized by a complex interaction of biomechanical, biochemical, and hereditary variables. Articular cartilage deterioration is usually the first sign of the disease, which is then followed by alterations in subchondral bone, the production of osteophytes, and inflammation of the synovium. The cells called chondrocytes, which are in charge of maintaining

cartilage, have been implicated in the development of disease in recent studies. In the pathogenesis of OA, abnormal extracellular matrix remodeling and chondrocyte death are crucial. <sup>(8)</sup>

Proteoglycans, chondrocytes, water, and type II collagen make up the majority of articular cartilage. In order to ensure that any cartilage deterioration is balanced by synthesis, healthy articular cartilage continuously maintains an equilibrium between all of the components. Thus, healthy articular cartilage is preserved. Matrix metalloproteases (MMPs) are degradative enzymes that are overexpressed throughout the process of osteoarthritis. This upsets the balance and causes a general loss of collagen and proteoglycans. Early in the degradative process of osteoarthritis, chondrocytes try to match the degradative process by increasing the synthesis of proteoglycans and secreting tissue inhibitors of MMPs (TIMPs). This process of restitution is insufficient, though. Even while there is an increase in synthesis, an increase in water content, an unorganized pattern of collagen, and finally loss of equilibrium, there is a decrease in the number of proteoglycans. <sup>(9)</sup>

### VI. CLINICAL SYMPTOMS OF KNEE OA <sup>(9)</sup>

- Typically of gradual onset
- Worse with prolonged activity
- Worse with repetitive bending or stairs
- Worse with inactivity
- Worsening over time
- Better with rest
- Better with ice or anti-inflammatory medication
- Knee stiffness
- Knee swelling
- Decreased ambulatory capacity

#### Radiographic Findings of OA <sup>(9)</sup>

- Joint space narrowing
- Osteophyte formation
- Subchondral sclerosis
- Subchondral cysts

### VII. HOMOEOPATHIC TREATMENT

Osteoarthritis (OA) of the knee is a common degenerative joint disease that causes pain, stiffness, and reduced mobility. Homeopathic medicines focus on personalized treatment by addressing both the individual's specific symptoms and their overall constitution.

Here are some commonly used as well as lesser known homeopathic remedies for knee osteoarthritis, along with their indications:

#### 1. *Rhus Toxicodendron* <sup>(10)</sup>

It is one of the most important remedies for OA, particularly when the joints are hot, red, swollen

and painful. Pain and stiffness in the joints especially the knee, hips and small joint of the hand and feet.

**Aggravation** - At night, Rest, Cold Damp Weather.

**Amelioration** - Movement, Warmth, Dry Weather.

### 2. *Bryonia alba* <sup>(11)</sup>

It is a valuable remedy for OA, particularly when the joints are swollen, inflamed and painful. Pain and stiffness in the joints especially in the knee, hips and shoulder with shining red swelling.

**Aggravation** - Movement, Walking, Stooping, Exertion.

**Amelioration** - Rest, Lying Down on Painful Side, Warmth, Pressure.

### 3. *Ledum palustre* <sup>(12)</sup>

This remedy affects the fibrous tissue of joints especially small; ankles; tendons; heels and affected part become purple puffy and then emaciates. Weakness and numbness of the affected parts.

**Aggravation** - Warmth; of covers, stove, air, Injury, Motion, Night.

**Amelioration** - Cold; bathing, air, Reposing.

### 4. *Medorrhinum* <sup>(13)</sup>

This remedy is very useful when the limbs are lame and stiff. Patient feels extremely sensitive to pain and feels pain as sharp and stitching. Cold extremities, trembling and numbness. It cures the tenderness in the soles. Cold sweaty feet.

**Aggravation** - Motion, Cold Damp Weather, Morning.

**Amelioration** - Continued Motion, Rest, Warmth.

### 5. *Calcarea carbonica* <sup>(10)</sup>

This patient suffers from sharp sticking pains; as if parts were wrenched or sprained. Weakness of extremities. Swelling of joints, especially knee. Arthritic nodosities. Old sprains.

**Aggravation** - From Exertion, Ascending, Cold in Every Form, Standing.

**Amelioration** - Dry Climate, Lying on Painful Side.

### 6. *Arnica montana* <sup>(10)</sup>

This remedy has great fear of being touched or approached, sprained and dislocated feeling. Soreness after over-exertion. Everything on which he/she lies seems too hard. Indicated after traumatic injury. Sore, lame, bruised feeling all over the body.

**Aggravation** - Least touch, Motion, Rest.

**Amelioration** - Lying down, or With Head low.

### 7. *Silicea* <sup>(10)</sup>

There is soreness in the feet from instep through to the sole. Suppurates. The parts lain on go to sleep. Loss of power in legs. Icy cold and sweaty feet. Imperfect assimilation and consequent defect nutrition. Inflammation and swelling in the joint.

**Aggravation** - Morning, Uncovering, Cold, Lying down

**Amelioration** - Warmth, Summer, In Wet or Humid weather.

### 8. *Natrum sulphuricum* <sup>(11)</sup>

The person has painful sensibility of limbs, which feels as if bruised or fatigued - prostration; tired, weary especially knees. Attacks comes on suddenly,

where complaints are due to fluid retention. Especially adapted for hydrogenoid constitutions.

**Aggravation** - Morning on rising, Touch, Pressure.

**Amelioration** - Open air, Movement, Change of Position.

### 9. *Colchicum autumnale* <sup>(14)</sup>

This medicine affects markedly the muscular tissue, periosteum and synovial membranes of the joints. Sensitiveness of the whole body, especially if the affected parts, to contact and motion. Arthritic pains in the joints; patient screams with pain on touching a joint or stubbing a toe. Redness, heat and swelling of the affected parts.

**Aggravation** - In the evening; night, from exertion, from motion, Touching the parts.

**Amelioration** - Lying quietly, while stooping, sitting.

### 10. *Causticum* <sup>(10)</sup>

It mainly manifests its action in chronic rheumatic, arthritis and paralytic affections, indicated by tearing, drawing pains in the muscular and fibrous tissues, with deformities about the joints. Cracking and tension in knees; stiffness in hollow of knee.

**Aggravation** - Cold winds, from motion of carriage.

**Amelioration** - Damp wet weather, Warmth, Heat of bed.

### 11. *Ruta graveolens* <sup>(14)</sup>

Ruta is indicated when there is pain, tenderness and swelling in the joint. Soreness and lameness as from a sprain or bruise. Acts upon periosteum and cartilages. Tendency to the formation deposits in the periosteum, tendons, and about joints. Restless, turns and change position frequently when lying.

**Aggravation** - In cold, Wet weather.

**Amelioration** - From lying on the back, Motion, Warmth.

### 12. *Sanguinaria canadensis* <sup>(12)</sup>

This remedy is commonly known as blood root, is a right sided remedy, often indicated in cases of osteoarthritis with a pronounced inflammatory component. It produces Vaso - motor disturbances; flushes of heat and general pulsations. Pain in bone near surface, which is least covered by flesh.

**Aggravation** - Touch, Motion.

**Amelioration** - Sleep, lying on back, left side.

### 13. *Zincum metallicum* <sup>(10)</sup>

For knee pain associated with weakness and restlessness, particularly when the pain is due to degeneration or a long-standing condition like osteoarthritis, indicated when the knee feels weak, unstable, or tired with prolonged walking or standing. There may also be a tendency toward cramps or spasms in the muscles surrounding the knee. The individual may be very irritable, anxious, and have a feeling of being "worn out."

**Aggravation** - Touch, Exhaustion, after being heated.

**Amelioration** - Motion, Hard pressure.

#### 14. *Symphytum officinale* <sup>(14)</sup>

It is known as a "bone healing" remedy, Symphytum is beneficial when there is a history of bone trauma, fractures, or deep tissue injury around the knee. Helps in cases of bone tenderness or pain from a previous injury that might have resulted in joint instability or chronic discomfort. Can also aid in cases where the knee pain has developed after an accident, especially when there is a sensation of deep, aching pain in the bones.

**Aggravation** - Touch, Motion, Pressure, after mechanical injury.

**Amelioration** - From warmth.

#### 15. *Magnesia phosphorica* <sup>(14)</sup>

It corresponds to daring, spasmodic pains along the course of the nerves; spasms in different parts of the body; colic, cramps. Pains lightning – like, coming and going. Knees may feel stiff and painful, with shooting or spasmodic pain.

**Aggravation** - Cold air, Cold water, Touch, Motion

**Amelioration** - From pressure, Warmth, Heat.

#### 16. *Aesculus hippocastanum* <sup>(11)</sup>

There is paralytic feeling in arms, legs and spine. Feels faint, weak and weary. Legs so weak can hardly walk. Swelling in knee, painful with stiffness, cannot bear slightest pressure.

**Aggravation** - Morning on wakening, Motion, Cold air, Standing.

**Amelioration** - Continued exertion.

#### 17. *Benzoicum acidum* <sup>(12)</sup>

Benzoicum acidum is known for helping with the discomfort from deposition of uric acid crystals in the joints, which may contribute to inflammation in conditions like osteoarthritis with a gouty component. Cracking in joints; knees. Pain and swelling in knee.

**Aggravation** - Cold, Motion, by uncovering, Changing weather

**Amelioration** - Heat.

#### 18. *Baryta muriatica* <sup>(12)</sup>

Suitable for cases of knee pain in those with a constitutional tendency toward weakness or sluggishness. Useful for those with painful, swollen joints that feel weak and unstable. Haemorrhagic extravasations in knee joint. Often indicated for elderly individuals or those who feel mentally or physically immature for their age.

#### 19. *Plumbum metallicum* <sup>(12)</sup>

For cases of knee pain with a feeling of painful lameness, weakness, and numbness. The knee may feel stiff and painful, especially after prolonged periods of inactivity. The pain can be intense, lightning like, that extort cries. Feels as if feet were made of wood.

**Aggravation** - Exertion, Motion, Touch.

**Amelioration** - Hard pressure, Rubbing, Stretching limbs.

#### 20. *Rhododendron* <sup>(10)</sup>

Rheumatic and gouty symptoms are well marked. Joints swollen. Pains in bones in spots, and

reappear by change of weather. Inflammation in the joints with swelling, pain, tearing in all limbs.

**Aggravation** - Storm, Night, towards morning.

**Amelioration** - Warmth, After the storm breaks.

#### 21. *Selenium* <sup>(12)</sup>

For osteoarthritis with severe weakness in the knees, especially in the elderly. There may be pain and discomfort in the knee with a feeling of weakness, tiredness, or instability in the joint. This can be beneficial when the knee joint feels fragile or "loose". Emaciation; of single parts. Cramps; then stiffness.

**Aggravation** - Hot days, Touch, Draft of air; even if warm.

**Amelioration** – After sunset, Inhaling cool air.

#### 22. *Sticta pulmonaria* <sup>(15)</sup>

There is swelling, heat, redness of joints. Spot of inflammation and redness over affected joint. Pain severe and drawing, like spasms, legs feel float in air. Housemaid's knee. Joints and neighbouring muscles are also red, swollen, painful.

**Aggravation** - Lying down, Motion, Change of temperature.

**Amelioration** - Open air, Free discharges.

### VIII. RUBRICS RELATED TO KNEE OSTEOARTHRITIS IN SYNTHESIS REPERTORY<sup>(16)</sup>

1. EXTREMITIES - PAIN - Knee
2. EXTREMITIES - PAIN - Knee - walking - after
3. EXTREMITIES - PAIN - Knee - standing, while
4. EXTREMITIES - PAIN - Knee - pressure - agg.
5. EXTREMITIES - PAIN - Knee - pressure - amel.
6. EXTREMITIES - PAIN - morning
7. EXTREMITIES - PAIN - morning - waking, on
8. EXTREMITIES - STIFFNESS - Knee - ascending stairs - when
9. EXTREMITIES - STIFFNESS - Knee - descending stairs
10. EXTREMITIES - STIFFNESS - Knee - rising from a seat
11. EXTREMITIES - STIFFNESS - Knee - sitting - after
12. EXTREMITIES - STIFFNESS - Knee - squatting, preventing
13. EXTREMITIES - STIFFNESS - Knee - walking - after
14. EXTREMITIES - SWELLING - Knee
15. EXTREMITIES - INFLAMMATION - Knee
16. EXTREMITIES - SWELLING - Knee - painful
17. EXTREMITIES - SWELLING - Knee - painless
18. EXTREMITIES - KNEES; position of - inwards

19. EXTREMITIES - KNEES; position of –  
outwards

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