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### RESEARCH ARTICLE

#### OSTEOARTHRITIS AND UNANI TREATMENT-A REVIEW.

**Dr. Anjum un nisa<sup>1</sup>, Dr. Aliya Hameed<sup>2</sup>, Dr. Roohi Hassan<sup>3</sup> and Dr. Atiqah<sup>4</sup>.**

1. Department of Ain uz n wa anaf, Faculty of unani medicine, Kashmir Tibbia College Hospital and Research Centre(KTCHRC), shilvat, Bandipora, J&K.
2. Dept. of Tashreehul badan, faculty, KTCHRC, J&K.
3. Dept. of Moalijat, faculty, KTCHRC, J&K.
4. Dept. of Saidullah, faculty, KTCHRC, J&K.

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#### Abstract

It is the chronic condition of joints in which the cartilage cushioning the ends of the bone loses its elasticity gradually and wears away. Synovial fluid in the joint decreases and dryness occurs in the joint. As per the unani concept the osteoarthritis or all the other arthritic pains are due to imbalance in humours (Akhlaat) i.e. accommodation of *Ghair tabbaayi Akhlaat* (abnormal humours in the joint). It can be *Damvi, Safari, Phelgami or Saudavi* accumulation.

Also according to unani concept osteoarthritis (OA) can occur because of imbalance in the temperament i.e. Sue-Mijaz.

It can be of two types:

1. Sue-Mijaz Saada (without any morbid matter)
2. Sue-Mijaz Maadi (with some morbid matter).

In osteoarthritis all the tissues of the joint are involved i.e. cartilage, bone, synovium, capsule, ligament and muscle. The most significant changes are the CARTILAGE CHANGES. There is enzymatic degradation of major structural components of cartilage 'Aggrecan' and 'Collagen'. The main causes responsible for OA are: excessive use of joints, obesity, joint injury, old age, exposure to severe cold and dry weather, cellular disorders etc. that lead to abnormal breakdown of cartilage. There can be stiffness, pain, inflammation and loss of movement.

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#### Introduction:-

Osteoarthritis (OA) is also called as degenerative joint disease. It is the chronic condition of joints in which cartilage cushioning the ends of bone loses its elasticity gradually and wears away. The synovial fluid decreases and dryness occurs in the joint.

Without protective cartilage the bones begin to rub against each other. OA is most common form of arthritis worldwide with symptoms ranging from minor discomfort to debilitation. It can occur in any of the body's joints but most often develops in hands and weight bearing joints as knees, hips, spine (usually neck and lower back) and feet. There is a steady rise in overall prevalence from the age of 30 years such that by the age of 65 yrs. 80% of people have some radiographic evidence of OA.<sup>1</sup>

**Corresponding Author:-Anjum un nisa.**

Address:-Department of Ain uz n wa anaf, Faculty of unani medicine, Kashmir Tibbia College Hospital and Research Centre(KTCHRC), shilvat, Bandipora, J&K.

According to a clinical study its prevalence is more in females than males who are above 60 yrs. of age, 13% in females, 10% in males. Recognized occupational risks for the development of OA are:

1. Farming (hip OA).
2. Mining (knee OA)
3. Professional football (knee OA).

#### Unani concept of osteoarthritis:-

In unani osteoarthritis is called as **tehjurul mafasil** (*tehjurul* meaning *inflammation* and *mafasil* meaning *joints*).<sup>13</sup> As per unani concept OA and all other arthritic pains are due to imbalance of HUMOURS when the morbid matter is diverted from vital organs towards the joints. It accumulates in the joints as they are empty and subjected to movement and activity. Moreover they have cold temperament. According to unani scholars predisposing factor of OA is accumulation of *Ghair Tabbayi Akhlaat* (abnormal humours) such as dominance of damvi (sanguine) or safravi (choleric) or balgami (phlegmatic) or saudavi (melancholic) Khilt (humour or mixture of any two *Ghair Tabbayi Akhlaat* or *Riyaah* (gases)).<sup>10</sup>

The other predisposing factor is *Sue-Mijaz* (abnormal temperament) that can be either

1. Sue-Mijaz saada (without any morbid matter.)
2. Sue-Mijaz madda (with morbid matter).<sup>4,5,7</sup>

#### Pathophysiology:-

In OA all the tissues of joint i.e. cartilage, bone, synovium, capsule, ligament, muscle is affected. Cartilage changes in the OA are most significant there is enzymatic degradation of the major structural components - AGGRECAN and COLLAGEN principally by aggrecanase, collagenase & stromelysin. There is eventual fissuring of the cartilage surface (fibrillation), development of deep vertical clefts, localised chondrocyte death and decrease in cartilage thickness. The bone immediately below compromised cartilage increases its trabecular thickness. At margins of joint there is production of new fibrocartilage that undergoes ossification to form an OSTEOPHYTE (abnormal cell in the bone tissue instead of normal osteocyte). Bone remodelling and cartilage thinning slowly alter the joint, increasing its surface. The synovium undergoes variable degrees of hyperplasia. The outer capsule also thickens and contracts. The muscles that act over the joint commonly show fibre atrophy.<sup>2</sup>

#### Causes of OA:-

1. Excessive consumption of dry, cold or stale food.
2. Exposure to severe cold and dry weather.
3. Excessive use of joint.
4. Obesity and overweight.
5. Joint injury.
6. Hereditary.
7. Old age.
8. Biochemical imbalances that put stress on joints.
9. Cellular disorders that lead to abnormal breakdown of cartilage.<sup>1,2,6</sup>

#### Clinical features:-

Stiffness, pain especially during movement, inflammation of joints, loss of movement are the main symptoms. Main focus of treatment is reduction of pain and inflammation. The ultimate treatment for a disabling joint is replacement.<sup>2,6</sup>

#### Diagnosis:-

1. It is chiefly based on history and clinical examination.
2. X-rays may be used as confirmative tool for diagnosis.

Typical changes seen on x- rays include:

1. Joint space narrowing
2. Sub Chondral sclerosis (increased bone formation around the joint)
3. Subchondral cyst formation
4. Osteophytes.<sup>2,6</sup>

**Treatment:-**

1. Proper treatment
2. Home remedies
3. Other measures including regimental therapies

**Proper treatment:-**

Following herbs are used in the treatment of osteoarthritis:

1. Boswellia serrata (kunder)
2. Curcuma longa linn (turmeric)
3. Withania somnifera (ashwaganda)
4. Zingiber officinale (ginger)
5. Terminalia chebula(halela), terminalia belerica(balela), emblica myroblan(aml) called TRIPHALA i.e. containing three constituents)
6. Commiphora wightii (mukil)
7. Asparagus racemose (satavar)

The above mentioned herbs have all been shown to decrease inflammation by interfering with production of inflammatory products in the body.

1. Boswellia serrata B.Serrata also called as Indian frankincense alleviates joint pain and inflammation. It actually blocks an enzyme *5-lipoxygenase* that plays a major role in the formation of chemicals which stimulate inflammation eg. Leukotrienes. Researchers have found that people with OA who took boswellia along with ashwaganda, turmeric, zinc reported less joint pain and increased mobility and strength.
2. Curcuma longa linn (turmeric) The active ingredient of turmeric is *curcumin* which has been shown to inhibit key inflammation producing enzymes ; *lipo-oxygenase*, *cyclo-oxygenase*, *phospholipase A2* thus disrupts the inflammatory cascade at three different stages. Some data suggests that it can protect the stomach against non-steroidal anti-inflammatory drugs NSAID's.
3. Withania somnifera (asgand or ashwaganda) In a study published in 200, the extract of the herb was found to suppress the production of pro-inflammatory molecules (like Tumour necrosis factor TNF alpha and two interleukin subtypes). In one study the anti-inflammatory effect of *ashwaganda* was comparable to taking the steroid-*Hydrocortisone* (*asgand root powder*).
4. Zingiber officinale (ginger) It works as an anti-inflammatory agent by interfering with an enzyme (cyclo oxygenase) that produces inflammatory chemicals in the body. There is some data showing that ginger has a moderate beneficial effect on OA of knee. Further research is needed to determine extent of ginger's effectiveness in treating OA.
5. Triphala The three herbs present in triphala i.e. halela, balela and amla also have anti inflammatory properties as preliminary studies show.
6. Commiphora wightii (mukil or gugglu) It has been shown to be a potent inhibitor of the enzyme (NF)-kB (nuclear factor-kB has an important role in immunity & its inappropriate activity has been linked with many auto immune & inflammatory diseases) which regulates the body inflammatory response. There are several studies that show decreased inflammation and joint swelling after administration of extract of guggulu resin.
7. Asparagus racemosus (satavar) It is having soothing /cooling and lubricating influence on the body. Studies have found that it has an inhibitory effect on chemicals which cause inflammation in the body such as TNF alpha and IL-1B (interleukin-1B).<sup>1, 11, 12</sup>

**Unani formulation for OA:-**

1. 3.5gm powder of asarun (2gm) (Asarum europium)
2. Tukhme karfas (2gm) (Apium graneolens)
3. Filfil daraz (3gm) (Piper longum) are given internally or orally twice a day (at least for 15 days)

**Externally concoction of:-**

1. Gule baboon 20gm (Matricari chammomila) &
2. Gule teesu 40gm (Butea frondosa)

made in 1 litre of water should be poured over affected joint daily once for 40 days . The above mentioned herbs namely:

- a. Asarun (*Asarum europeum*)
- b. Tukhme karfas (*Apium graneolens*)
- c. Filfil daraz (*Piper longum*)
- d. Gule baboon (*Matricaria chammomilla*)
- e. Gule teesu (*Butea frondosa*)

have been in use to manage OA.

These drugs have –mussakin(analgesic),muhalil(anti-inflammatory), Muqavi aasab(nerve tonic),mudire boul(diuretic) properties. <sup>4,5</sup>

#### Home remedies:-

1. Ginger tea:-take 10 to 12 slices of ginger and 8 cups water and boil it, then take this tea throughout the day after heating it again.<sup>1,6</sup>
2. Sesame oil: - it is used to massage stiff and painful joints in the morning, massage improves blood circulation and reduces inflammation and stiffness.<sup>6</sup>
3. Fenugreek: - put one teaspoon of fenugreek in a cup of water and boil it, then next morning mix well and drink.
4. Dashmula (decoction of ten roots) coarse powder of dashmula is readily available, 10 gms of powder is boiled with 160ml of water until 40ml remains. The filtrate is taken hot 2-3 times a day before taking food. It relieves pain, swelling and stiffness.<sup>6</sup>

Following are the ten roots in dashmula:

- a. *Aegle marmelosa* (Indian bael)
- b. *Premna serratifolia* (arani)
- c. *Oroxylum indicum*
- d. *Stereospermum suaveolens*
- e. *Gmelina arborea* (beach wood)
- f. *Solanum indicum* (Indian nightshade)
- g. *Solanum xanthocarpum*
- h. *Desmodium gangeticum* (shalaparni)
- i. *Uraria picta* (prishnaparni)
- j. *Tribulus terrestris* (gokshura)<sup>6,7,8</sup>

*Cedrus deodar* (devadaar):-

**Decoction** of roots and bark of *cedrus* is use, 10 gms of root and bark in powder form are taken and boiled with 160ml of water until 40ml i.e. one fourth of it remains. The filtrate is taken hot 2-3 times a day, half an hour before food.

#### Castor plant (*ricinis communis*):-

Decoction of roots of castor plant is highly effective in OA .It is prepared in the same way as mentioned in dashmula and taken in the same dose.

#### Castor oil:-

Edible castor oil in the dose of 10 -25ml can be taken at bed time mixed with hot milk or with decoction of roots of castor plant.

#### Cinnamon (*cinnamomum verum*):-

Mix one teaspoon cinnamon powder in one tsp honey. Take it an empty stomach every morning.

#### *Cissus quadrangularis* (hathajoodi):-

The juice of plant can be given in 10ml dose with ghee in equal quantity(called medicated ghee).Macerated stem of the fresh plant is used for application over painful joints.

#### Other measures including regimental therapies

1. Weight loss:-being obese or overweight can increase the stress on your weight bearing joints such as knees and hips. Changes in diet and inclusion of various forms of exercises can do wonders in relieving symptoms of OA.

2. Control of blood sugar:-high glucose levels (diabetes mellitus) speed the formation of certain molecules that make cartilage stiffer and more sensitive to mechanical stress. Diabetes can also trigger systemic inflammation that leads to cartilage loss.
3. Right eating habits: - no specific diet has been shown to prevent OA. Certain nutrients have been associated with a reduced risk of disease or its severity. They are:
4. Omega-3 fatty acids: - they are healthy fats shown to reduce joint inflammation. Good sources of these are fish oil, nut oils, including walnut, canola, soybean, flaxseed or linseed, olive.
5. Vitamin c:-it reduces the risk of progression of OA. Sources include, citrus fruits and juices, green peppers, strawberries, tomatoes, broccoli, turnip greens, other leafy greens, sweet and white potatoes, etc.
6. Vitamin D:-low Vitamin.D is related to OA progression sources include, exposure to sunlight, fish such as salmon, sardines etc. Vitamin. D fortified milk, cereals and eggs.

#### **Onions and garlic:-**

Di-allyl sulphides-the compounds known as *alliums* found in garlic, onions inhibit the enzymes that cause joint degeneration.

#### **Regimental therapies:-**

like cupping(hijama), leeching, massaging etc. are also effective in treatment of osteoarthritis. They increase the circulation in the affected joint and the inflammatory mediators and other toxic radicles are destroyed.<sup>1,6</sup>

#### **Conclusion:-**

Osteoarthritis is a common condition with significant impact on quality of life of affected individuals. Unani treatment is better and effective in treating chronic diseases of musculoskeletal system with no or least side effects. It uses complex and individually tailored interventions, including manual therapies, life style and nutritional advice, dietary supplements, pharmacological modalities and non pharmacological modalities like Dalak (massage), Fasad (venisection), Taleeq (leech therapy), Hijama (cupping) and all other mentioned regimes have shown a great effect in the management of OA.

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