

Understand Osteoarthritis: It will keep You Moving

Osteoarthritis (OA) is the common cause of musculoskeletal system disorders. The basic abnormality is the destruction of joint cartilage. So all joints with cartilage structure could have OA. Tissues around the affected joints, synovium and subchondral bone are also affected. Weight bearing joints such as knees, hips, feet, cervical and lumbosacral spine are commonly affected. The distal interphalangeal (DIP) and proximal interphalangeal (PIP) joints of the hand are also frequently affected by OA.¹

In the elderly population, OA is a major cause of disability.² Commonly, pain is the reason why a person seeking medical help. Another reason is the stiffness and difficulty in performing activities of daily life, an embarrassing change in shape or cosmetic impairment. OA is a chronic disease - can be progressive so that over time lead to joint dysfunction. Dysfunction of the joints can cause severe disruption to the functioning of the whole person; causes disturbances in mobility, activities of daily life, work, creativity, role in the family and or community. Every effort needs to be done to manage pain, prevent or slow down the deterioration and progression. In order to maintain optimal functional ability, muscle imbalance must be corrected, optimal muscle function must be maintained, good posture should be pursued. For someone suffering from osteoarthritis, an understanding of the disease itself is extremely important. This understanding is a key factor for good management of OA.

An overview and facts about OA^{3,4,5}

- It is the most common joint disease in the USA.
- More in women than men
- Rarely at a young age. In old age is often accompanied by various co - morbidities
- Various factors are contributing in the development of OA: tissue integrity, genetics, trauma, local inflammation, cellular process, biochemical, and biomechanical
- There is inflammation and thickening of the synovium, micro-fractures of subchondral bone, osteophytes formation, loosening of the ligaments & joint capsule, decreased joint range of motion, muscle spasm, muscle disuse atrophy
- All movable joints may develop OA, but the most commonly affected are: hips, knees, hands, and vertebrae
- Radiological pictures does not correlate with the severity of complaints
- Stiffness and pain are the main complaints
- OA causes joint deformity
- OA causes joint instability
- OA causes an inefficient use of energy, the patient become more easily tired.
- OA leads to functional limitations and can also lead to handicap.
- OA reduces the feeling of comfort or well being of a person.
- OA causes great psychological pressure and greatly reduces quality of life
- No known cure for OA.
- There are various ways to slow down the disease progression.

Progression of OA, its impact & Classification

OA is a chronic disease that worsens over time, although in some cases OA does not deteriorate and remains under certain conditions for a long time. Some people experience a very disturbing disability, while others only have a mild problem. In the beginning, pain is felt when and after a moderately strenuous physical activity, later the pain occurs while doing mild physical activity and even at rest. Joint deformity (enlarged, bends) can be clearly seen and is sometimes accompanied by inflammatory reactions. Aging, being female, obesity, joint malalignment, joint instability (such as ACL deficient knee, after meniscectomy) are risk factors for OA.

Because of mechanical load on joints, some types of activities or job and sports increases the risk of OA. These risk factors play an important role in both the onset and also in the progression of the disease. Basic abnormality occurs in the joints cartilage. There are cartilage thinning, fissures, subchondral reaction, cysts formation and collapse, and also osteophytes formation. Debris inside the joint will stimulate further inflammation reaction, especially on the synovial lining (~synovitis). Synovitis will cause fluid collection in the joint (~joint effusion). This fluid buildup and pain that is caused by local inflammation would inhibit muscle contraction. Pain, muscle weakness, feeling of not having enough power, and the slower protective reflexes all cause instability, not confident to move, difficulty in doing activities. Comorbidity especially in the elderly can also accelerate the deterioration and malfunctioning.

Impact of OA on a person's functioning is influenced by the anatomical location of the affected structure and the characteristics of the individual itself. OA in the dominant-hand and arm area can cause a person to have difficulty to perform self-care such as: personal hygiene, dressing or other daily activities. For manual labor, hand dysfunction can lead to job loss. If OA affects the hip and knee joints, the mobility becomes a major issue so that someone can experience difficulty when negotiating the stairs, moving from bed to chair and vice-versa, or having problems when traveling for some distance. The next impact is the sufferer of OA will reduce their social involvement, and even had to ask caregivers for assist their daily life. Poor posture whether it is primary or secondary caused by OA will cause further damage to the postural joints. This occurs due to excessive load on the joints. Traction and pressure changes around the joints can also cause a periarticular reaction (enthesitis, bursitis, tendinitis) which increases the morbidity and aggravate dysfunction.

Based on the theory of causes, OA can be classified into:

- **Primary or idiopathic OA.** The cause is not clear, usually affects 1 or 2 joints (~local idiopathic), or can affect more than 3 joints (~general idiopathic)
- **Secondary OA.** OA occurs secondary to trauma, metabolic diseases, or congenital abnormalities. Some OA cases that were previously considered as idiopathic or not to have a clear cause, are now believed to be due to some subtle abnormalities (congenital or developmental defects)

Assessment of OA 5

Assessment in case of OA begins with: an accurate diagnosis, assess the magnitude of the problems faced by patients, and co-morbidity assessment. There are no specific laboratory abnormalities that can be associated with osteoarthritis. The diagnosis is made by clinical and radiographic findings. X'ray is the imaging method of choice for the diagnosis of OA. Other imaging methods can be used for specific needs. MRI has the advantage as it can visualize soft tissue around joints. CT is good for visualization of bone malalignment (patellofemoral, ankle and foot). Ultrasound can also be used for soft tissue assessment: cartilage degeneration, periarticular conditions. Ultrasonography has the advantage of being available at the bedside and for its possibilities to perform dynamic examination. Arthrocentesis can be performed for the diagnosis purposes and also for therapeutic procedures.

For assessing the success of pain management, several tools are available to use (VAS ~ visual analog scale or NRS ~ numerical rating scale, or the like). Although very subjective, but can bring substantial benefits in the management of OA. Tools for functional assessment: the Lequesne algofunctional index, Katz index of independence of Activities of Daily Living, WOMAC OA index, etc.

These tools give the clinician better understanding about how big is the problem being faced by the patient and also the effectiveness of the OA management.

Management of OA

- Managing OA means:
- To control symptoms of OA and all manageable factors that contribute for OA progression.
 - Improve functional status

Generally, management includes the use of pharmacological agents, non-pharmacological and surgery. Non-pharmacological interventions are the cornerstones of osteoarthritis therapy. This include: physical modalities, therapeutic exercise, taping-strapping, orthosis and various supporting equipments. Some cases require surgery to solve the problem (eg.: osteotomy, arthroplasty). In this case, rehabilitation interventions are needed both before and after surgery. In the pre-surgery time, rehabilitation can provide: education, corrective and strengthening exercise for the muscles around the joint area that will undergo surgery.

Can we prevent OA?

OA is not simply a degenerative disease. Various factors play a role in the manifestation and the resulting disability. Some things can be prevented or delay the onset and course of the disease:

- Exercise
- Healthy diet
- Joint injury prevention
- Correction against joint misalignment.

Proper regular exercise can enhance dynamic stability of the joints by increasing muscle tone, improve protective reflex mechanism, prevent muscle imbalance (agonists vs antagonists, mobilizers vs stabilizers), increase endurance and strength. On the other hand, weak muscles can cause delayed muscle contraction, cause unnecessary joint surface friction or shearing forces, which increases the risk of cartilage injury / OA. A healthier lifestyle, ideal weight is the best preventive measure that can be done. With appropriate weight, we can avoid excessive stress on the joints. Reducing the risk of injury to joint and musculoskeletal system can be achieved through various ways: doing enough warming up, doing regular conditioning exercise, increasing the load to the musculoskeletal structures slowly, using proper sports equipment and if necessary a protective one, such as optimal footwear (example: using running shoes for running activity).

For someone who already has the signs & symptoms of knee OA, it is wise to have low impact exercises (like: swimming, cycling, walking). Job rotation may be necessary to avoid the adverse effects of repetitive work in the workplace. People with knee joint malalignment can reduce the risk by using special footwear, and if necessary can use an appropriate orthosis. In very selected cases, osteotomy can be performed to realign the joint, and relieve excessive pressure on one joint compartment.

MESSAGE

The management of OA should be started as early as possible. Primary prevention is the most important. Knowledge, regarding the natural course of the disease is very important as someone can make an independent and responsible effort and also could have realistic expectations.

References

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