Interventional Rheumatology : An Emerging New Concept

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The Penguin English Dictionary describes a physician as a 'doctor legally qualified to treat disease by medicines etc. but not by surgery'. Rapid technological advances in medicine have redefined these traditional roles. Specialties, to keep pace with changing times, can no longer afford to be immutable. Interventional Cardiology is one such subspecialty of Medicine where the distinction between a physician and surgeon has been blurred. A relatively new entrant in this scenario is Interventional Rheumatology.

The spectrum of Interventional Rheumatology encompasses:

I. Joint and soft tissue injections
   A) Diagnostic
   B) Therapeutic - Arthritis, Bursitis, Tenosynovitis, Enthesitis, Nerve entrapment, Fascitis.
II. Arthroscopy - Diagnostic, Therapeutic, Research.
III. Minimally invasive procedures - Skin and subcutaneous biopsy, Muscle biopsy (open; percutaneous), Sural nerve biopsy, Minor salivary gland biopsy, Needle biopsy of synovium (blind, fluoroscopic).
IV. Others - Vertebral balloon kyphoplasty

In this editorial I shall dwell upon joint injections and arthroscopy, two procedures that are firmly entrenched in Rheumatology.

**JOINT INJECTIONS**

Joint injections, both for diagnostic and therapeutic purposes, are the commonest intervention in Rheumatology. The most compelling indication for diagnostic aspiration is acute monoarthritis. Important causes of acute monoarthritis include septic arthritis and crystal induced arthritis like gout. A good rule of the thumb is to consider every case of monoarthritis as infection of the joint unless proven otherwise. Urgent aspiration to rule out pus in the joint is warranted because untreated septic arthritis can lead to rapid joint destruction.

Synovial fluid analysis is the gold standard for diagnosis of infections or gout. Yet, it is one of the most neglected laboratory tests in clinical practice. The fluid should be subjected to gross examination, total and differential leukocyte count, Gram and Ziehl Neelsen staining, culture, and crystal studies. Normal synovial fluid has a cell count of < 200 WBCs/mm³, mostly mononuclear. A white count of 2000/mm³ is used as a cut-off to differentiate inflammatory from non-inflammatory fluids. A non-inflammatory fluid generally has < 50% neutrophils while infected fluids (septic arthritis) has > 95% neutrophils. Tests of viscosity, mucin clot, string test are of historical importance only and do not yield reliable or consistent information. Similarly, synovial fluid sugar and protein values, unlike pleural/peritoneal fluids or CSF, have little diagnostic utility. The value of synovial fluid analysis is limited in patients who present with polyarticular disease.

Apart from diagnosis, joint and soft tissue injections are also used for therapeutic purposes. Corticosteroids are the most common therapeutic agent injected into a joint. Local steroid injections are used not only for arthritis but also bursitis, tenosynovitis, enthesitis like tennis elbow, plantar fascitis and nerve entrapment like carpal tunnel syndrome etc. In rheumatoid arthritis, the major indication of intra-articular steroid injections is one or two recalcitrant joints that are inflamed despite good overall control of the disease. Here, instillation of steroids into the inflamed joint can give relief without having to escalate systemic therapy. Intra-articular steroid injections are also a safe and effective modality for patients with knee osteoarthritis and effusion. Used judiciously, they do not have any significant deleterious effects on anatomical joint structure.

Ultrasound guidance has been used to assist joint injections. Sonographic guidance is particularly useful when fluid collections are small (less than 5 mm) and deep or when the inflammatory process is adjacent to anatomic structures that could be seriously damaged by the injection.

**ARTHROSCOPY**

Arthroscopy is an accurate and reliable method for examining the internal structures of joints. There are few rheumatologists who use the technique of arthroscopy, in most centers referral is made to an orthopedic surgeon who

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specializes in this procedure. The Arthroscopy Association of North America (AANA) has issued guidelines for practice of arthroscopy that could apply either to a rheumatologist or an orthopedic surgeon. Office arthroscopy is being developed with the help of smaller needle flexible scope that can be used on patients under local anesthesia. A new term Medical Arthroscopy may be coined for arthroscopy used exclusively for diagnosis of arthritis and synovial research. This term may differentiate arthroscopy performed by surgeons for microsurgery such as in cases of tear of ligaments, menisci etc. October 1992 survey of rheumatology training program directors at the 14th National Institutes of Health (NIH) funded Multipurpose Arthritis Centers found that nearly half of the programs had a faculty rheumatologist performing the procedure, with all but one of the rest planning to start arthroscopy within 1 to 5 years.

This is the major recent advance in the arena of interventional rheumatology and represents a rapidly burgeoning field with expanding indications. Since the time Takaji used a modified pediatric cystoscope to arthroscope a cadaver knee, arthroscopy has come a long way. The 1970s and 80s witnessed a shift from diagnosis to therapeutic utilization, and arthroscopic surgery became a well established endoscopic procedure. The last decade was witness to an increasing number of rheumatologists taking to this procedure. Chaturvedi and colleagues report their experience with ‘medical arthroscopy’ in this issue of JAPI. This is the first report of arthroscopy performed by physicians/rheumatologists from India and is, thus, a valuable addition to the pre-existing literature in this field.

Several factors are responsible for bringing this procedure within the ambit of rheumatologists, namely, advent of smaller needle arthroscopes, which can be used in a office setting without the need for operations theatre/general anesthesia; greater patient acceptance of endoscopic procedures; better definition of indications; and last but not the least, augmentation of physician income. Arthroscopy was initially used for the knee, which is the joint most frequently scoped by the rheumatologists. Later on its use has extended to other joints like the temporomandibular, interphalangeal, wrist, elbow, spinal facet joints etc. The broad indications for diagnostic arthroscopy are failure to arrive at a diagnosis; patient with a known diagnosis become refractory to standard therapy; and symptoms out of proportion to degree of abnormalities on a standard radiograph (suggesting additional or new diagnostic possibilities). These have been very aptly highlighted by O'Rourke and Ike in their elegant article and include: (a) Inflammatory arthropathy of uncertain diagnosis. (b) Established inflammatory arthropathy with symptoms disproportionate to clinical findings and refractory to medical therapy. (c) Acute pyarthritis with clinical features suggesting septic arthritis but with negative cultures. (d) Septic arthritis refractory to therapy despite appropriate antibiotics and repeated closed drainage. (e) Painful swollen knee with normal radiographs and noninflammatory fluid. (f) OA with symptoms out of proportion to radiographic findings and refractory to medical management. (g) OA with unexpected synovial fluid characteristics.

I would like to strike a note of caution here that arthroscopy is not a substitute for clinical examination which retains its primacy in rheumatology. Arthroscopy permits direct visualization of the cartilage and may afford viewing of greater surface area than even MRI. However, a pragmatic view would be to view the two techniques as complementary and not competitive, with arthroscopy providing the opportunity of obtaining tissue or therapeutic intervention in the same setting.

Therapeutically, arthroscopic interventions have replaced open arthrotomies for repair of lesions of menisci and cruciate ligaments, synovectomy, lavage and debridement. The potential advantages of arthroscopic synovectomy include a more thorough resection from areas not accessible in open process, sparing of undamaged structures and smaller wound size. The negative aspects are that the benefits may be shorter lived when compared to open synovectomy. Septic arthritis unresponsive to antibiotics and closed needle drainage can be treated with arthroscopic drainage.

The arthroscopic is also an important research tool for the rheumatologist. Arthroscopic sampling of synovium for ex vivo investigations has been employed to evaluate therapeutic interventions, and to quantitatively assess the effects of new treatment modalities on articular cartilage and other intraarticular structures.

Arthroscopy by rheumatologists has stirred a debate on nomenclature. Needle arthroscopy, medical arthroscopy or rheumatological arthroscopy are some of the terms used in literature. Most users of the technique prefer the term ‘rheumatological arthroscopy’. Knee arthroscopy performed by a rheumatologist is a safe procedure with a complication rate of 1.8%, mostly minor. Since the procedure requires no general anesthesia, thigh tourniquet or leg holding device, the complications seen with conventional arthroscopy like deep venous thrombosis, thrombophlebitis, joint effusion or quadriceps atrophy is much less. Same has been the experience of Chaturvedi and colleagues. Two things emerge out of their study; one, the procedure is safe, and second, the category where it is most useful is unexplained monoarthritis. In fact, their demonstration of fungal infection in the joint on biopsy is indeed uncommon. The authors’ contention that the patients had a vague sense of comfort on the side that was scoped needs validation in rigorously designed trials.

What might be the way forward in this evolving field? Establishing minimum standards for clinical competency in rheumatological arthroscopy; a national registry with linkage to other bodies like the ILAR (International League of Associations for Rheumatology); and greater cooperation with orthopedic colleagues may be some of the steps in this direction. These, indeed, are exciting times in Rheumatology as interventions and interventional rheumatologists come of age!
REFERENCES


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**Announcement**

**ICP ORATION**

Suggestions are invited from members for the following assignments so as to reach Dr. Sandhya Kamath, Hon. General Secretary not later than **31st July, 2004**.

1. Rabindranath Tagore Oration - 2005 and 2006

There are no prescribed nomination/application forms for the above orations but, persons are selected from the recommendations received from members of the Association. The recommendations for the above assignments must be accompanied with reasons for recommending a particular person showing the value of his/her research and eight copies each of three of his/her best publications. All relevant papers in connection with the suggestions, such as the bio-data, list of publications etc., should be submitted in 8 sets by the proposer. The recipient of the above award should deliver a lecture pertaining to his/her work at the Annual Conference in January, 2006.

A person who has received oration in the past is not eligible for the above oration.

Oration is open to eminent persons from the discipline of Medicine and allied subjects such as Pharmacology, Biochemistry, Pathology and Physiology. The orator in the discipline of Medicine should preferably be a member of API.

The members of the Governing Body of API and the Members of the Faculty Council of ICP are not eligible to receive any award.

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