**Introduction**
A variety of conditions may affect the locomotor system in diabetic subjects causing several Rheumatic problems and bony lesions. The limited joint mobility (cheiroarthropathy) is characterized by stiffness of the small joints of the hands and other sites. A variety of soft tissue Rheumatic conditions are seen in diabetes such as Adhesive Capsulitis of the shoulder, flexor tenosynovitis and Carpal tunnel syndrome. Hyperostotic bone change, Diffuse Idiopathic Skeletal Hyperostosis (DISH) develops early in diabetes particularly in type 2 Diabetes. Diabetic osteoarthropathy (Charcot's joint) is characterized by destruction and lytic bone changes affecting the bones of the foot. Gout and Pseudogout are also seen more frequently in Diabetes.\(^1,2\)

**Limited joint mobility (diabetic cheiroarthropathy)**
In Diabetes of long duration there is thickening and tightening of the skin particularly of the dorsum of hands giving the resemblance to the waxy tight skin seen in patients with Systemic Sclerosis (Scleroderma).

**Pathogenesis**
*Multifactorial*: Microangiopathy leads to connective tissue ischaemia with resultant fibrosis.

**Symptoms**: Stiffness of finger & restriction in normal activity such as
- Using insulin syringe.
- Difficulty in forming a fist.
- Reduction in grip strength
- Problem in fine movement.

<table>
<thead>
<tr>
<th>Table-I: Rheumatic Disorders &amp; bone problems in Diabetes mellitus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non articular conditions</strong></td>
</tr>
<tr>
<td>Skin, soft tissue &amp; fibrosing conditions</td>
</tr>
<tr>
<td>Cheiroarthropathy &amp; Pseudoclaudroxia.</td>
</tr>
<tr>
<td>Dupuytrens contracture</td>
</tr>
<tr>
<td>Flexor Tenosynovitis (Trigger finger)</td>
</tr>
<tr>
<td>Carpal tunnel syndrome</td>
</tr>
<tr>
<td>Adhesive Capsulitis of the shoulder</td>
</tr>
<tr>
<td>Shoulder Hand Syndrome</td>
</tr>
</tbody>
</table>

**On Examination**
- Prayer sign positive
- Patient may not be able to closely appose some

---

1. Dr. A. K. M. Musa, FCPS (Medicine), MCPS (Medicine), DTCD, Assistant Professor, BIRDEM (Medicine unit-I) and Ibrahim Medical College
2. Dr. Khwaja Nazimuddin, FCPS (Medicine), Assoc. Professor, BIRDEM (Medicine unit-I) and Ibrahim Medical College
3. Dr. Sadia Afrin Huq, MBBS, Honorary Medical Officer, Medicine unit-I, BIRDEM Hospital, Dhaka
4. Dr. Rene Suzan Claude Sarker, MBBS, Assistant Registrar, Medicine unit-I, BIRDEM Hospital, Dhaka
5. A. K. M. Shaheen Ahmed, FCPS (medicine), MCPS (Medicine), Registrar, BIRDEM (Medicine unit-I) and Ibrahim Medical College
or all fingers when palms are placed together.

In differentiating with scleroderma
- Raynaud's Phenomenon is absent (positive in 90% cases of scleroderma).
- ESR or CRP is not raised.
- Topoisomerase & centromere activity is not present.
- Radiologically- no pulp atrophy.

Management
- Strict glycaemic control.
- Physiotherapy.

Dupuytren's contracture
Occurs in 33%-60% of patients with IDDM. Patients present with nodular thickening of the palmar fascia leading to flexor contracture usually of the fourth and fifth digits.

Flexor tenosynovitis
Occurs in 5%-33% of diabetic patients. Females with long standing Diabetes are more commonly affected than males. Patients complain of aching and stiffness in the palmar aspect of the hands. A trigger finger may occur as a result of an inflammatory nodule getting caught in the proximal pulley at the base of the finger. The thumb of the dominant hand is most commonly involved (75%). Laboratory findings and radiographs are unremarkable. Treatment includes NSAIDS, local steroid injection & surgery.

Carpal tunnel syndrome (CTS)
CTS commonly occurs in diabetic patients. Up to 15% of all patients with CTS will have diabetes. Patient presents with numbness in the Median nerve distribution, nocturnal paresthesia, hand pain and pain radiating to the arm and shoulder. Tinel’s and Phalen’s signs may be positive. NCV can be done for confirmation.

Treatment: Splints, NSAIDS, Diuretics, local steroid injection into the Carpal tunnels, surgical decompression.

Adhesive capsulitis/frozen shoulder
It occurs in 10% -33% of Diabetics and is more common in Diabetics than in non-Diabetics. The typical patient is female with NIDDM of long duration who present with diffuse soreness and global loss of motion of shoulder. Up to 50% of patients have bilateral involvements. Laboratory studies and radiographs are unremarkable.

Treatment: Treatment includes NSAIDS, rarely intra-articular steroids and vigorous physical therapy to improve range of motion.

Shoulder hand syndrome
Also known as Reflex Sympathetic Dystrophy Syndrome and is referred to as Complex Regional Pain Syndrome Type-1. It is characterized by pain and...
swelling usually in the distal extremity accompanied by vasomotor instability, trophic skin changes and rapid development of bony demineralization\textsuperscript{8,9}.

**Neuropathic joint (charcot's joint)**
Progressive destructive arthritis associated with loss of pain, proprioception or both. First described by Jean Martin Charcot in 1968 in patients with Tabes dorsalis. Charcot's joint occurs in $<1\%$ of all diabetics—both male and female are equally involved. Most patients are ($>66\%$) are over age 40 and have had long standing $>10$ yrs poorly controlled Diabetes mellitus complicated by a diabetic peripheral neuropathy\textsuperscript{1,9}.

**Pathogenesis**:
Increased blood flow through the foot, secondary to local autonomic denervation, together with abnormal pressure loading may lead to unsuspected fracture with minimal normal daily trauma.

**Symptomatology**:
The usual presentation is swelling of the foot with no or little pain with progression of disease. The patient can develop "Rocker bottom" feet due to metatarsal collapse.

**Diagnosis**:
Radiographs frequently show severe abnormalities characterized by the 5D's-

\begin{table}[h]
\begin{tabular}{|l|l|}
\hline
Disease & Involved Joint \\
\hline
Diabetes mellitus & Tarsal and Tarsometatarsal joint \\
Tabes Dorsalis & Knees, Hips & Ankles \\
Syringomyelia & Glenohumeral, Elbow & Wrist \\
\hline
\end{tabular}
\end{table}

Isotope bone scan using Indian 111- labeled WBC is helpful in differentiating from Osteomyelitis (Test positive cases). Sometimes CT scan or MRI scan may be required.

**Treatment**
\begin{itemize}
\item Immobilization.
\item Bisphosphonates to reduce osteoclastic activity
\item Reconstructive orthopedic techniques.
\end{itemize}

In Diabetics early recognition and treatment of a Charcot's foot by prohibiting weight bearing for at least 8 weeks may lower the chance of severe disease\textsuperscript{1, 2, 7, 9, 10}.

**Osteoarthrosis**
Diabetic subjects are more likely to be involved with degenerative arthritis earlier and in the more severe form. Osteoarthrosis may be linked with obesity in Diabetes\textsuperscript{1}.

**Gout & hyperuricaemia**
An increase in serum uric acid concentration is a marker for CHD and is associated with glucose intolerance. Hyperuricaemia is also more prevalent among individuals with obesity, hyperlipidaemia and hypertension and so has been considered by some investigators to be part of Insulin Resistance Syndrome\textsuperscript{7}.

**Pseudogout**
Calcium pyrophosphate deposition arthropathy is characteristically seen in older subjects and
usually affects the larger joints such as the knees. Radiography shows features of chondrocalcinosis.\textsuperscript{1,7}

**Bone problems in diabetes mellitus**

Diffuse Idiopathic skeletal hyperostosis (DISH; Forestier's disease) is a non inflammatory disease occuring in male aged over 50 years. It is characterized by flowing hyperostosis (Bone formation), calcification of the anterior longitudinal ligament of at least 4 contiguous vertebral bodies and non erosive enthesopathies (Whiskering). The disease is not associated with sacroilitis, apophyseal ankylosis or HLA B-27. Patients are frequently are asymptomatic. DISH occurs in upto half of diabetic patients compared to nearly 13% in the general population\textsuperscript{1,8,12}.

Treatment is with NSAIDS if there is pain, exercise to retain movement and muscle strength. Osteopenia & fracture particularly with type I diabetes of long duration may occur due to reduced bone mineral density compared to non-diabetic population\textsuperscript{1,8}.

**Conclusion**

It has been clear that a good number of musculoskeletal disorders are associated with Diabetes mellitus. These disorders not only increase the disability of patients but some of the musculoskeletal syndrome has definite correlation with other diabetic complications for example LJM and retinopathy has been well established. Finally Diabetes must be considered in the differential diagnosis of Musculoskeletal Syndromes when other signs and symptoms suggestive of Diabetes is present\textsuperscript{1,2,10}.

**References**