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RESEARCH ARTICLE

THE FOOT IN CHRONIC RHEUMATOID ARTHRITIS.

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Abstract

The feet of 100 patients with chronic rheumatoid arthritis were studied, 91 were

Found to have different level of pain or multiple degree of deformity. The metatarsophalangeal joints of those patients were involved in a most frequent. Clinical and radiological tests (59.5%) and (71%) respectively.

Clinical involvement(40.5%) were seen more often than radiological involvement (18.5%) in the ankle joint, but the reverse was the case in the mid –tarsal joint.

Hallux valgus (29%) was the commonest deformity reported, followed by Pes Plano Valgus (11%), Hammer toe (10%), clawing of the toes (8%), these deformities were involved significantly less than other studies.

Ten percent of the patient were able to wear ordinary shoes, the slippers were a frequent alternative.

Our findings were discussed and compared with other studies.

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Introduction:-

Rheumatoid arthritis (RA) is a chronic, symmetrical, inflammatory polyarthritis of an unknown causes involving the diarthrodial joints and exhibiting in a proportion of patients a variety of extra-articular features such as vasculitis and nodules (1). Articular inflammation may be remitting, but if continued usually results in progressive joint destruction, deformity and ultimately variable degree of incapacitation.

The disease prevalence in the world ranges between 0.3-1.5 percent of the population ⁽²⁾, while its prevalence in Iraq is 1% ⁽³⁾. Involvement of the foot is very common and may be seen in 50-90% of patients with RA ^(4,5).

The problem of the rheumatoid foot can be divided into early, due to synovial swelling, and late, when a wide variety of secondary deformities occur and are complicated by mechanical or shoe fitting problems and by non-articular manifestations of rheumatoid disease or its treatment.

In early disease:-

fusiform swelling of the interphalangeal toe joints is rare while tender thickening and puffiness about the base of the base of toes makes the foot broader as the joint are forced apart by swelling, this gives rise to the “day light sign”.

The commonest problem in the hind foot is involvement of subtalar joint with danger of Valgus deformity below the ankle (5).

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Long-standing disease is characterized by marked deformities of the fore-feet, with Hallux Valgus and packing together of the lateral toes, which may override or underide the hallux or each other(6).

With destruction of metatarsophalangeal (MTP) joints, the toes become subluxed upwards on the metatarsal heads, the fibro-fatty cushion moves forwards so that there is no protection for the tender eroded metatarsal heads, the toes become clawed and painful Callosities develop(7).

Flattening of the foot is due to inflammation that weakens the structure which maintain the arch, the internal arch falls and progressively leads to flat foot with marked Valgus, the percentage of flat foot is greater in feet with Tarsal Arthritis(8).

Erosions in the feet are frequently detectable on the medial aspects of the Metatarsal heads, although the earliest erosion of the fifth Metatarsal often appears on its lateral aspect.

Calcaneal erosion adjacent to the retocalcaneal bursa is common, and a well- marinated spur may develop posteroinferiorly at the attachment of the Plantar Aponeurosis (9).

Fibrous union is more common with the exception of intertarsal joints which may show rarely bony ankyloses.

The study was done to explore the problems of the feet among chronic rheumatoid arthritis patients both clinically and radiologically.

Patients and methods:-

One hundred patient with adult rheumatoid disease attending the Rheumatology department in Baghdad Teaching Hospital during the period from May to December 1993.

Criteria for inclusion:-

1. Patients fulfilled the 1987 revised ARA criteria for classification of RA (10)
2. Pain or deformity of the feet.
3. Disease duration over one year.

Exclusion from the study:-

Patients who had any previous operation on the feet that caused significant modification to the foot were excluded. Information were taken from each patient according to a standard protocol, which includes the patient's name, age, sex, occupation, address, disease duration, morning stiffness, drug taken by the patient, ability to buy comfortable shoes at a shoe shop and whether they wore special shoes. Detailed clinical examination of each foot was done.

The following grades were used:-

Grade 0: Normal

Grade I: pain only on walking

Grade II: Pain on passive movement

Grade III: Pain at rest(11)

Rheumatoid factor was done for each patient and x-ray of the feet were obtained in dorso-planter and lateral planes. The interpretation of x-ray films was done blindly by a radiologist.

Results:-

The number of patient found to be suitable for inclusion in the study was 91 and the total number of feet examined 180, 2 foot were found to be unsuitable because of previous surgery. The patient age, sex, duration of the disease are shown in table 1. The situation and degree of involvement of forefoot, midfoot and hindfoot are set in table 2.

MTP joints were the most frequently involved part of the foot 107 (59.5%), followed by ankle joint 73 (40.5%). Midtarsal joint was involved in 47 (26%) and subtalar joint was involved in 41 (23%) and both did not show severe involvement. Callosities were observed in 35 feet which were mainly under 2nd and 3rd MTP joints.

Pressure lesions were observed in 32 feet mainly over 2nd and 5th proximal interphalangeal joint. Hallux Valgus was present in 52 feet (29%), 25 of which had a bursa overlying the 1st MTP joint.

Hallux Varus was found in 2 feet only

Hammer toes were noted in 18 feet (10%).

Clawing of toes showed in 14 feet (8%).

Three feet showed evidence of vasculitis, 2 (1%) had purpura and one foot showed vasculitic ulcer.

X-ray changes:-

Involvement by Osteoporosis, joint space narrowing, erosion and secondary Osteoarthritis (OA) changes are shown in table 3. The radiological involvement of various joints of the feet were shown in table 4. Calcaneal spurs were found in 19 (21%) out of 91 patients were which were bilateral in 14 patients. Three patients had posterior calcaneal spurs at region of insertion of Achilles tendon (3.3%) which were bilateral in one patient.

Shoes: Only 10% of patients were able to wear ordinary shoes, the rest of the patients wore slippers or extra-large shoes which were padded or cut to accommodate misshapen feet.

Table 1:-Age and duration of disease at time of examination

Sex	Patient No.	Age (y)		Disease duration	
		Range	Mean	Range	Mean
Female	76	23-70	44.5	2-33	7.2
Male	15	25-70	48.5	2-20	7.2
Total	91	23-70	45.5	2-33	7.3

Table 2:-pattern and grades of joint involvement of fore foot, mid foot and hind foot

Grade	MTP	Ankle	Mid-tarsal	Sub-Talar	Plantar Calcaneal
I	55	39	30	32	20
II	40	26	17	9	10
III	12	8	0	0	0

Total	107	73	47	41	30
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Joint	Present study (180) NO. (%)	AL_Rawi study 1977 (198) NO. (%)	Vidigal study 1975(204) NO. (%)
MTP	107 (59.5)	145 (73)	157 (77)
Ankle	73 (40.5)	116 (58)	97 (47)
Mid_tarsal	47 (26)	67 (37)	56 (27)
Sub-talar	41 (23)	60 (30)	43 (21)

Table 3:- Radiological involvement of various joints in 180 feet

Table 5:-The pattern of joint involvement of rheumatoid feet compared with other studies

Joints	No.	(%)
MTP	128	(71)
Mid-tarsal	88	(49)
Sub-talar	62	(34.5)
Ankle	33	(18.5)

Discussion:-

Involvement of the foot in as major crippling problem in RA and metatarsalgia is an important diagnostic feature of RA.

Only 10% of the patients were able to wear ordinary shoes, slippers were an alternative (especially most of the patients were females and usually they were slippers) but they give little protection from cold or mechanical injury.

The MTP joints were the most frequently involved part of the foot clinically, followed by ankle joint, least was subtalar joint, the same was found by AL_Rawi study 1977⁽¹⁵⁾ and by Vidigal study 1975⁽¹¹⁾ as shown table 5.

The ankle joint was source of symptoms in 73 feet, nearly twice the number with radiological damage 33. The Midtarsal joint was involved in 47, which was nearly half of those observed with radiological changes 88, it must therefore be assumed that Midtarsal joint is transient in involvement with fewer symptoms than ankle involvement, but more prone to radiological damage.

Hallux Valgus was present in 52 feet (29%) in our study which was significantly less than the finding by 2 other authors^(11, 13).(p<0.002).

Hallux Varus was present in 1 % in our study which was comparable to other finding⁽¹³⁾. Hammer toe was reported in 10% in our study which was significantly to other report⁽¹²⁾ (p<0.002).

Pes Plano Valgus were present in 20 feet (11%) and all these patients had tarsal arthritis, this figure was significantly less than in other reports^(11,12) (p<0.002). These differences are probably because Iraqi patients with RA have milder, less destructive disease⁽¹⁵⁾.

Radiological involvement of the joints were generally less than reported by Vidigal study as shown in table 6. Interphalangeal joint of great toe was involved in 26 (14%) which was less frequently than that were reported by other study⁽⁴⁾.

Simple Calcaneal spur was present in 21% and posterior Calcaneal spur in 3.3% which was nearly similar to other study⁽¹⁴⁾.

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