

ACUTE KNEE MONOARTHRITIS AMONG PATIENTS AT PRINCE HASHEM HOSPITAL: APPROACH AND DIFFERENTIAL DIAGNOSIS

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ABSTRACT

Objective: To determine the diagnosis of acute knee monoarthritis and its relation to age and gender among adult patients referred to the rheumatology clinic at Prince Hashem Hospital.

Methods: This study was carried out at Prince Hashem Hospital, over a period of two years from July 2000-July 2002. One hundred and fourteen patients were enrolled in the study after fulfillment of our predetermined criteria. They all underwent physical, radiological and laboratory tests. Synovial fluid analysis was also performed to all patients.

Results: Out of 152 patients referred to our clinic, only 114 patients fulfilled the criteria for the study, 36.8% patients were females, with male to female ratio 1.7:1, age ranged from (22-90) with a mean age of 49.4 years. Osteoarthritis was the predominant diagnosis reaching (43%) followed by gouty arthritis (29%), right or left knee were affected close to each other. Reiter's syndrome, brucellosis, and pseudogout were the least to be found (0.9%) for each.

Conclusion: Acute monoarthritis remains a challenge both diagnostically and therapeutically, but with careful physical examination, radiological, laboratory and the most important synovial fluid aspiration and analysis, this condition can be treated and alleviating its bad consequences.

Key words: Knee effusion, monoarthritis, synovial fluid analysis,

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Introduction

Monoarthritis, by definition, is an inflammation that involves a single joint regardless of its size, presented with swelling restricted to the joint, limitation of movement with tenderness⁽¹⁾. Its onset is usually acute and sometimes dramatic, with or without fever, pain, and swelling⁽²⁾.

Acutely swollen and tender knee joint is the most frequent rheumatologic emergency in clinical practice⁽³⁾. It accounts for 20% of all visits to primary care physicians⁽⁴⁾. History and physical examination can provide highly suggestive diagnostic clue, while arthrocentesis and synovial fluid analysis can sometimes give a definitive diagnosis, and it should be regarded as infectious unless proved otherwise⁽⁵⁾. Septic arthritis is still associated with considerable morbidity and mortality due to delay in diagnosis so it is important to

be considered in the differential diagnosis of swollen joint⁽⁶⁾.

Also non-septic articular disorders are fairly common and represent a significant diagnostic and therapeutic challenge⁽⁷⁾. Trauma is the commonest cause of acute monoarthritis among patients attending an emergency department. However, in a significant minority of patients, there will be no history of trauma, where they need different approach and investigation⁽⁶⁾. A basic approach to acute monoarthritis includes; a careful history, a physical examination, radiographs, and a selected laboratory tests⁽⁸⁾.

Effusion yields fluids of characteristic nature: noninflammatory, inflammatory, septic, or hemorrhagic. This categorization of the effusion may permit specific diagnosis or narrowing of differential diagnosis.

Therefore arthrocentesis and the subsequent

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evaluation of synovial effusion is often the definitive diagnostic procedure for the patient presenting with joint effusion or intrasynovial hemorrhage⁽⁹⁾.

The joint can reflect a wide variety of systemic diseases as monoarthritis such as; connective tissue disease, inflammatory bowel disease, sarcoidosis, and vasculitis⁽⁶⁾.

Methods

This study was carried out at Prince Hashem Bin Al-Hussein hospital over a period of two years from July 2000 to July 2002. All patients who had been referred to the rheumatology clinic from different clinics of the hospital were initially evaluated in different occasions (one day apart).

Exclusion Criteria:

- Patients with history of trauma.
- Patients under the age of 16.
- History of onset more than 14 days.
- Patients with oligo- or polyarthritis and those with both knee swelling.

Those patients who had only knee joint effusion were enrolled in the study. Effusion was proved by clinical (milking test and patellar tap test), and radiographic examinations. All knees were aspirated and synovial fluid was sent to the laboratory for analysis.

We looked for the diagnosis of the swollen knee, age, sex of the patient, and the affected knee. One hundred fifty two patients had been referred to our clinic. One hundred fourteen patients who fulfilled our criteria were enrolled in the study.

Knee radiographs (anteroposterior, lateral, weight and non-weight bearing) were obtained to all patients, Complete blood cells (CBC), C-reactive protein (CRP), erythrocytes sedimentation rate (ESR), uric acid (UA), kidney and liver function test (KFT, LFT), rheumatoid factor (RF), and other laboratory tests (as needed) were performed. Synovial fluid was analyzed for; gross appearance, cells type, gram staining, culture, and crystals. Selected criteria⁽¹⁰⁻¹³⁾ were used for the diagnosis of the patients.

Results

One hundred fourteen patients fulfilled the criteria for inclusion in the study. Forty-two (36.8%) patients were females while male patients were 72 (63.2%), the age of the study group ranged from (22-90) years with mean age of 49.4 years. Almost both knees were affected equally; the left knee was affected in (52.6%) while the right side was affected in (47.4%). (Table I).

We found that osteoarthritis (43%) was the most common diagnosis followed by the gouty arthritis (29%). Reactive arthritis came in third place (10.5%). Palindromic arthritis and psoriatic arthritis had similar percentage (4.4%), Behcet's syndrome (5.3%), while Pseudogout, and Brucellosis Reiter's Syndrome were the least encountered in the study with a percentage of

nearly (1%) for each. (Table II).

Gouty arthritis starts earlier, (44.1%) before the age of 50 years, than those of osteoarthritis (22%) in the same age group (Table III). Both knees were affected almost equally in osteoarthritis patients (left 53% and right 47%). In the gouty patients the frequency of the left knee affected was double than the right (left 66.7% right 33.3%), (Table IV). Gouty arthritis affects male patients more than females 73% and 27% respectively, while osteoarthritis affects almost both sexes similarly (53.1% males, 46.9% females) (Table V).

Discussion

Acutely swollen and tender knee joint is the most frequent rheumatologic emergency in clinical practice⁽³⁾. It is a medical emergency, the urgency of the situation is dictated by the potential joint destruction from untreated infection, and not merely by the pain and disability that brings the patient to the physician. For this reason we tried to find what diagnosis could be found from the non-traumatic knee monoarthritis and its frequency rate.

The most frequent cause was degenerative joint disease (DJD) with a (42.74%). Freed JF *et al*⁽¹⁾ found (DJD) to be the most common cause but in a lower percentage (26.3%). While Preslar III *et al*⁽⁴⁾ found (DJD) in lower a percentage (17%), it came in second place after idiopathic type.

According to Towheed, trauma was the commonest cause of acute monoarthritis and followed up by gout⁽⁸⁾, in our study we excluded those with history of trauma because we could not follow them (they have been referred to orthopedic specialists and followed by them).

Gout is a common cause of acute non-traumatic monoarthritis (ANMA) mainly in a middle-aged man⁽¹⁴⁾, It was also common in our study (29%) and their mean age was 51.8 years (Table II) which is higher than that found by Preslar⁽⁴⁾, and Freed JF⁽¹⁾ (15%, 18.4%) respectively. In an audit of 408 synovial fluid samples, 25 (6.1%) samples showed crystals⁽¹⁵⁾, which is too far from our findings.

Reactive arthritis is the commonest form of inflammatory arthritis in young men⁽¹⁶⁾, it was found in 12 patients (10.5%) who all were young (22-37 years) with a mean age of 26.75 years.

Palindromic rheumatism, a syndrome that can be the initial manifestation of many different organic processes or one that never evolves into anything more⁽¹⁷⁾.

Septic arthritis is still associated with considerable morbidity and mortality; due to delay in diagnosis⁽⁶⁾, the most common cause of septic arthritis in adults is gonococcus⁽¹⁸⁾. Only one patient had brucellosis, which is lower than that was reported in other studies^(1,4). This difference may be explained by 2 reasons; first, patients with gonococcal infection rarely present to doctors in Jordan due to religious and ethical reasons. Second, septic arthritis is due to penetrating trauma, contiguous spread of osteomyelitis, and extension from a wound

infection ⁽¹⁹⁾, these patients are usually treated by Orthopedic Department. Despite this, septic arthritis should be suspected in all patients who present with an acutely swollen joint.

Two patients had pseudogout and another one had Reiter's syndrome, Preslar ⁽⁴⁾ found pseudogout in 3% of his patients, a percentage close to ours (1.8%), 5.3% was found by Freed JF ⁽¹⁾.

Finally, diagnosis can be difficult, particularly in the presence of underlying joint disease. Immediate joint aspiration with Gram's stain, culture, and analysis of the synovial fluid is essential. Intensive, long-term antibiotic therapy is necessary to prevent a high rate of morbidity and, possible, death from septic arthritis ⁽¹⁹⁾.

Synovial fluid analysis is a "Liquid biopsy" of the joint; it is like urinalysis for renal disease, its urgency is compared to the need for lumbar puncture if meningitis is suspected. It should be performed to every patient with monoarthritis, as it is a simple safe procedure that can be performed at the bedside or in the office with almost no complication as long as sterile technique is used ⁽²⁰⁾. Standard light microscope may show crystals in a form that can suggest the correct diagnosis and definitive diagnosis confirmed by polarized light microscope ⁽²¹⁾.

It is worth mentioning here; insignificant trauma will

bring a pre-existing condition such as gout or septic joint to the patient attention, causing the individual to present to the emergency with a history of "joint trauma".

Conclusion

Acute monoarthritis remains a challenge both diagnostically and therapeutically; but with careful physical examination, radiological, laboratory and accurate synovial fluid aspiration and analysis, this condition can be treated which can prevent its bad consequences.

Synovial fluid aspiration is a simple safe procedure that can be performed at the bedside or in the office with almost no complications as long as sterile technique is used. It is mandatory in every patient with acute monoarthritis and it is usually diagnostic. One might say that the approach to the acute joint is with a needle!

Further studies are needed to follow up patients with osteoarthritis (both mono and bilateral), to identify those with repeated effusions and to determine the underlying causes.

Limitation of the study

Cell count in the synovial fluid was not easy to obtain (not documented in the medical and laboratory records).

Table I. Age, gender, and affected knee distribution of the study group

Gender	Number of patients		Age		Affected knee			
					Left		Right	
	Frequency	%	Range	Mean	Frequency	%	Frequency	%
Female	42	36.8	68(22-90)	47.3	23	54.8	19	45.2
Male	72	63.2	59(24-83)	50.7	37	51.4	35	48.6
Total	114	100	68(22-90)	49.4	60 (52.6%)		54 (47.4%)	

Table II. Distribution of patients' age, and gender in relation to diagnosis.

Diagnosis	No. of patients		Gender		Age	Affected knee	
	Frequency	%	Male (%)	Female (%)	Range/mean	Right	Left
Reiter's Syndrome.	1	0.9	1	0	42	0	1
Pseudogout	2	1.8	2	0	56	1	1
Brucellosis	1	0.9	1	0	65	1	0
Psoriatic Arthritis	5	4.4	3 (60)	2 (40)	28-66 (42.8)	3	2
Palindromic arthritis	5	4.4	3 (66.6)	2 (33.3)	24-41 (30.33)	4	1
Behcet's Syndrome	6	5.3	6	0	25-36(31.16)	4	2
Reactive Arthritis	12	10.5	6 (50)	6 (50)	22-37(26.75)	7	5
Gout	33	29	24(73)	9(27)	30-72(51.76)	11	22
Osteoarthritis	49	43	26(53.1)	23(46.9)	36-90(57.68)	23	26
Total	114	100.0	72 (63.2)	42(36.8)	22-90(49.40)	54	60

Table III. Age group of gouty and osteoarthritis patients.

Age group	Osteoarthritis		Gouty arthritis	
	Frequency	Percentage	Frequency	Percentage
30-39	3	6	7	20.6
40-49	8	16	8	23.5
50-59	15	30	6	17.6
60-69	14	28	9	26.5
>70	10	20	4	11.8
Total	50	100	34	100.0

Table IV. Affected knee in Osteoarthritis and gouty patients.

	Osteoarthritis (50 patients)		Gout (34 patients)	
	Frequency	Percentage	Frequency	Percentage
Left Knee	26	53.1	22	66.7
Right Knee	23	46.9	11	33.3
Total	49	100	33	100

Table V. Gender in Osteoarthritis and gouty patients.

	Osteoarthritis (49 patients)		Gout (33 patients)	
	Frequency	Percentage	Frequency	Percentage
Female	23	46.9	9	27.3
Male	26	53.1	24	72.7
Total	49	100	33	100

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