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Case Report

Orthopaedics Section

Idiopathic Eosinophilic Synovitis of the Knee Joint with Peripheral Eosinophilia – A Rare Case Report

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ABSTRACT

Synovitis, presenting as a synovial effusion is common. The most common cause include tuberculosis, osteoarthritis. Here with, presenting a rare case of monoarticular synovitis with synovial fluid and peripheral blood eosinophilia of unknown aetiology in an 18-year-old male. We review the clinical and pathological features and impress the need for synovial fluid examination in all cases.

Keywords: Diethyl carbamazine, Eosinophilic synovitis, Synovial effusion

CASE REPORT

An 18-year-old male, student by profession, presented to us with a history of knee pain and swelling over the right knee joint for a period of 6 wk. Prior to presentation patient had visited a general practitioner who had prescribed NSAIDs for a period of 3 wk.

Patient had no history of trauma, any constitutional symptoms such as fever/loss of weight/loss of appetite, no history of cough with expectoration, no history of gastrointestinal symptoms such as diarrhoea/dysentery, no history of similar illnesses in the family, no history of similar episodes in the past.

PHYSICAL EXAMINATION

Patient was conscious comfortable and afebrile with normal vital parameters. Detailed examination of the cardiovascular, respiratory and gastrointestinal systems did not detect any abnormality.

Examination of Right knee joint revealed a diffuse swelling which was not warm. Minimal joint line tenderness was present. Patellar tap was elicited and the skin over the joint appeared normal [Table/Fig-1]. Assessment of range of movements showed a restriction in the terminal range and no deformities were observed.

INVESTIGATIONS

We admitted the patient, performed an x-ray of both the knees [Table/Fig-2a,b] and a chest x-ray presuming a provisional diagnosis of tuberculous synovitis of the right knee. Investigations such as Complete blood count, ESR, Peripheral smear, Mantoux test were done.

Under sterile aseptic precautions we aspirated 20 ml of synovial fluid which was dark yellow colour [Table/Fig-3] and the fluid sent for analysis.

With above clinical history and investigation results a diagnosis of eosinophilic synovitis with peripheral eosinophilia was made.

Further tests such as stool examination, ultrasound abdomen were carried out to identify the cause of the eosinophilia. However all tests came out negative [Table/Fig-4-6].

Treatment and follow up

Patient was put on Hetrazan (Diethylcarbamazine) in a dose of 2mg/kg TDS for a period of 3 wk + iron and folic acid supplementation to correct the anaemia After a course of 3 wk of DEC+ iron and folic acid, the blood parameters returned to normal – with a fall in eosinophils from 12 % to 5%. The patient did not develop any subsequent swellings of the knee. On 6 months follow up the patient has not had any recurrence of symptoms an.

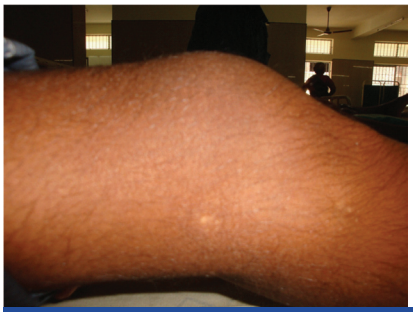
DISCUSSION

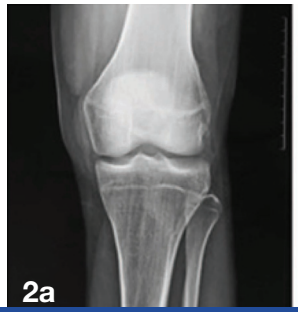
Needle aspiration of synovial fluid forms the bedrock in the work up of patients presenting with synovial effusion [1]. The synovial fluid should be aspirated under strict aseptic precautions and sent as separate samples for a) Gross characteristics, b) Cell count, c) Constituents such as sugar, protein d) Microbiological staining such as Gram and Ziehl Nielsen for acid fast bacilli and e) Culture.

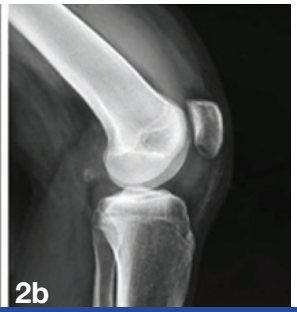
The gross characteristics such as colour, volume and viscosity provide clues to the probable aetiology as referenced in [Table/Fig-6].

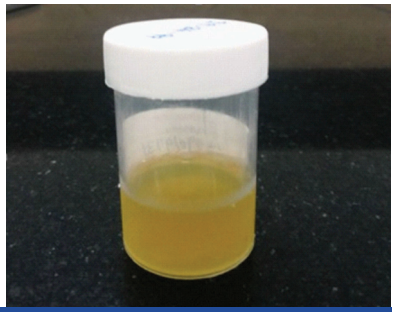
Special investigations may then be carried out depending on the outcome of the preliminary workup.

Few cases of synovial fluid eosinophilia have been reported in literature [2]. Gupta and Katji [3] identified presence of eosinophils in cases of tuberculous synovitis and rheumatoid arthritis. But, in their study the eosinophil was not the predominant cell and hence did not have any diagnostic utility. Similar to Bona Tauro [4] our study is also from an area of high prevalence of filaria and similarly we did not find any evidence of microfilaria in the synovial fluid or blood. The





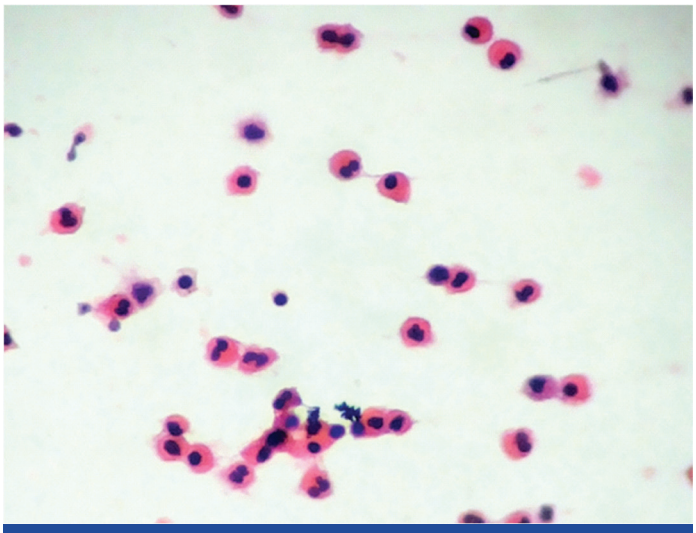




[Table/Fig-1]: Swelling of the right knee joint **[Table/Fig-2a,b]:** Plain X-ray showing synovial effusion **[Table/Fig-3]:** Synovial fluid aspirate – dark yellow in colour

Test Mantoux test	Result Negative
Complete Blood Count	Total Count : 6000 cells/cu mm Differential count : Neutrophils: 40% Lymphocytes: 43% Monocytes: 5% Eosinophils: 12% ([Table/Fig-5]Leishman stain (40X); Smear shows predominantly of eosinophils. No RBCs seen in the background.) Haemoglobin: 10g%
Peripheral smear	Microcytic hypochromic anaemia with eosinophilia No blood parasites seen.
Erythrocyte sedimentation rate C-reactive protein RA factor	12mm/hr 4.6mg% Negative
Synovial fluid analysis	Total count : 10,000 cells/cumm Differential count(from centrifuged deposits) : [Table/Fig-5] -Neutrophils :1% -Lymphocytes: 4% -Eosinophils: 95% Others: Few synoviocytes present No red blood cells seen in the background No microfilaria.
Synovial fluid	Proteins: 5.9g% Sugar: 85mg
Staining and culture	Gram stain : Negative AFB Stain: Negative Culture : No growth

[Table/Fig-4]: Details of results



[Table/Fig-5]: Leishman stain (40X); Smear shows predominantly of eosinophils. No RBCs seen in the background)

presence of synovial fluid eosinophilia could be secondary to a wide variety of diseases which need to be investigated for as listed in [Table/Fig-7] below [5]. If these tests cannot pick up a primary factor causing the eosinophilia they are labelled as idiopathic. Hence, our patient falls under the idiopathic variety. All previous reports of idiopathic eosinophilic synovitis have had normal levels of eosinophils in the peripheral smear. However, our patient has peripheral blood eosinophilia which is the first of its kind according to our review of literature. After 3 wk of DEC, the peripheral blood eosinophilia was corrected and the patient did not develop subsequent knee effusions.

	clues to probable etiology	ASIA grade A	ASIA grade B
volume, ml	<3.5	>3.5	>3.5
Viscosity, cm	3-6	<3	<3
Color	Straw yellow	Opaque yellow	Milky
Leukocytes/ul	50-2000	2000=75000	>75000

[Table/Fig-6]: Clues to probable etiology [6]

Allergic Diseases : Drug reactions, allergic rhinitis, Urticaria
Atopic diseases: Asthma, eczema, atopic dermatitis
Parasitic infections : ancylostomiasis, filaria, ascariasis
Connective tissue disorders : poly arteritis nodosa, rheumatoid arthritis, Chrug-strauss syndrome
Skin disease : Pemphigus, exfoliative dermatitis, dermatitis herpetiformis
Pulmonary infiltration syndromes : Lofflers syndrome, Tropical pulomnary eosinophilia
Malignancy : Lymphoma, Leukemia, Hodgkin's disease
Eosinophilic syndromes : Eosinophilia myalgia, Shulman's syndrome, Idiopathic Hypereosinophilic Syndrome
Miscellaneous : Brucellosis, radiation therapy

[Table/Fig-7]: List of diseases causing eosinophilia [7-11]

A short course of DEC may hence be considered curative for this problem as the symptoms have not reappeared after 6 months follow up. However, longer study periods are necessary in a larger sample of patients before definitive conclusions can be made.

CONCLUSION

Idiopathic eosinophilic synovitis with peripheral eosinophilia is an extremely rare but easily curable condition. The above case is a beautiful illustration of the principle that all effusions need to be investigated appropriately and not passed off as just another effusion which is drained and samples forgotten which might lead to a recurrence of the disease. This is case is hence presented not only for its rarity but also the fact if correctly identified, cured very easily.

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