

A Study to Analyze the Pattern of Synovial Lesions from Synovial Biopsies In a Tertiary Care Hospital

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ABSTRACT

Background: Synovial fluid analysis has been recommended as a routine procedure for the diagnosis of various joint diseases. Synovial fluid is normally found in bone joints. The purpose of the study is to analyze the pattern of synovial lesions from synovial biopsies in a tertiary care hospital.

Methods: The present study included 120 synovial biopsies received for period of one year at a tertiary care center. Relevant clinical and radiological details were obtained from the database.

Results: In the present study, the common age group affected were between >60 years. Most common symptoms were pain and swelling. Knee joint was commonest joint involved in 90% of the cases.

Conclusion: Synovial tissues can have a predominant role in histomorphological diagnosis of different kind of arthritis as well as in recognizing early phase of arthritis which may have important therapeutic implications in preventing unnecessary

operative intervention of later stages.


Keywords: Arthritis, Synovial Biopsy, Synovium, Histopathology.

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INTRODUCTION

Synovium is the soft tissue which lines the spaces of diarthrodial joints, tendon sheaths, and bursae. It has continuous surface layer of cells known as intima and the underlying tissue known as subintima.¹

Indications for carrying out synovial biopsies include both benign and malignant cases. Benign infectious conditions with pathogens like neisseria, fungi, varicella zoster virus, suspected tuberculous arthritis may require a biopsy for definitive diagnosis. Non-infectious granulomatous states, such as sarcoidosis, affecting a joint can be diagnosed when typical histology of the involved synovia is demonstrated. Other inflammatory benign conditions such as rheumatoid arthritis can generally be diagnosed based on clinical, serological, radiological criteria alone and, routinely there is no requirement of a biopsy.^{2,3}

Synovial biopsies are indicated when only one joint is affected and helps in distinguishing various aetiologies such as infective, traumatic or crystal induced.¹ However, histopathological study of synovial biopsy has its own limitations and requires correlation of clinical, radiological and serological findings to come to conclusive diagnosis. The purpose of the study is to analyze the pattern of synovial lesions from synovial biopsies in a tertiary care hospital.

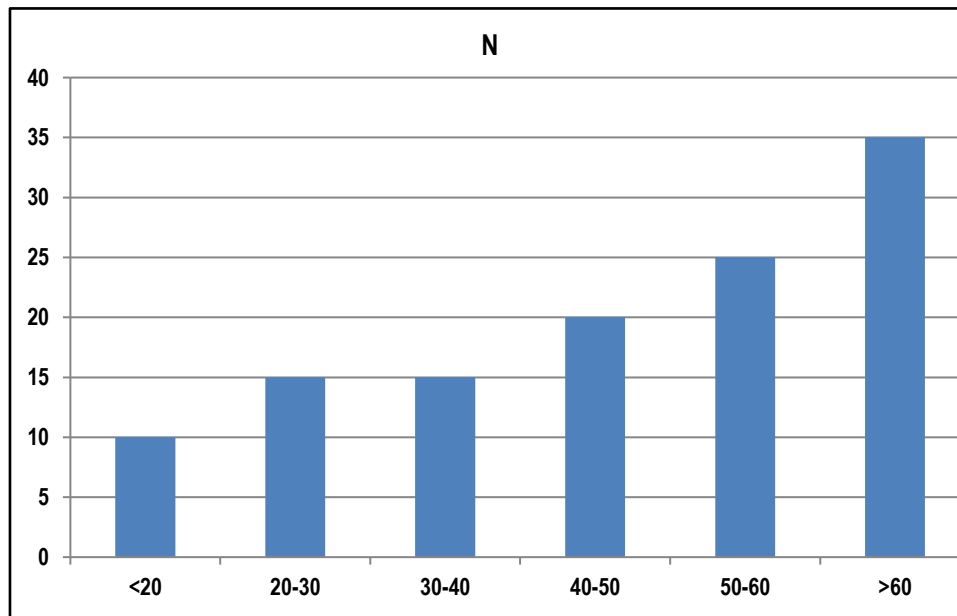
MATERIALS AND METHODS

The present study included 120 synovial biopsies received for period of one year in Department of Pathology, Grant Government Medical College and Sir J.J. Group of Hospitals, Mumbai, Maharashtra, India. Relevant clinical and radiological details were obtained from the database. All the biopsies were stained for H and E and wherever necessary special stains like Zeihl-Neelsen stain for AFB and Prussian blue stain for hemosiderin were also done.

The biopsy samples were fixed in 10% buffered neutral formaldehyde. Tissue was processed by increasing concentrations of alcohol and paraffin blocks were prepared. Sections were cut to 4-6 μ , stained by haematoxylin and eosin and examined under microscope for histopathological examination. Special stains and immuno histochemical studies were performed wherever necessary. The final diagnosis was made. The clinical and pathological data were collected from medical records and reviewed for patient demographics, age, sex and histological type of synovial lesion. Based on histomorphology, lesions were classified under four categories that is inflammatory joint diseases, degenerative joint diseases, tumors, and tumor-like conditions.

Table 1: Age distribution of inflammatory joint disease

Age group	N
<20	10
20-30	15
30-40	15
40-50	20
50-60	25
>60	35
Total	120



Graph 1: Age distribution of inflammatory joint disease

Table 2: Distribution of various synovial lesions according to etiology

S No.	Lesion	Diagnosis	N
1.	Inflammatory lesion infections Autoimmune others	Tuberculosis	10
		Septic arthritis	5
		Rheumatoid arthritis	5
		Chronic non-specific synovitis	35
2.	Degenerative joint disease	Osteoarthritis	15
		Gout	4
		Pseudogout	6
3.	Tumor and tumor like condition	Synovial chondromatosis	7
		GCT tendon sheath	5
		Synovial lipoma arborescence	4
		Synovial lipoma	4
4.	Others	Necrotic tissue	5
		Osteo-cartilaginous loose bodies	5

RESULTS

In the present study, the common age group affected were between >60 years. Most common symptoms were pain and swelling. Knee joint was commonest joint involved in 90% of the cases. (Table 1 and Graph 1) Most common histopathological

diagnosis in the study was chronic nonspecific synovitis, tuberculosis and osteoarthritis. Cases of benign tumors such as synovial lipoma arborescence, synovial lipoma, giant cell tumor of tendon sheath and synovial chondromatosis were also noted in our study. (Table 2)

DISCUSSION

In the present study, the most common age groups affected was >60 years. This is similar to study conducted by Vijay PM, et al.⁷ where maximum cases were also in the age group of 61-70 years and 41-50 years, respectively. The purpose of the study is to analyze the pattern of synovial lesions from synovial biopsies in a tertiary care hospital. The life expectancy of the general population of the country is increasing due to better living conditions and affordable health care.

The diagnosis of chronic synovitis of knee could benefit by undergoing synovial biopsy.⁷ Diseases related to synovium constitute major part of orthopedic outpatient department management. Diagnosis includes clinico-radiological and serological investigations. In cases where these findings are equivocal, specific tests become mandatory for appropriate management.⁸ It has been documented in literature that cases presenting as chronic synovitis of the knee could benefit by undergoing synovial membrane biopsy.⁹

Abhyankar et al study tuberculous arthritis was the commonest lesion followed by rheumatoid arthritis and degenerative joint disease.¹⁰ The present study also found out chronic nonspecific synovitis followed by tuberculosis as the most common histopathological diagnosis. In the present study 10 cases of tuberculous synovitis were encountered. Higher incidence of non-caseating was observed in a study by Vijay PM et al. All the cases showed presence of Langhan's giant cells in the present study. Various studies mention values ranging from 6.7% to 18% of cases showing giant cells.⁷

Tenosynovial giant cell tumors (TSGCT) are a group of benign intra-articular and soft tissue tumors with common histologic features. They can roughly be divided into localized and diffuse type both of which includes giant cell tumors of tendon sheath.¹¹ Lipoma arborescence one of the rarest and a non-neoplastic synovial proliferative lesion. In the present study we found one case of Lipoma arborescence, patient aged 50 years this was in concordance with age group of 39–66 years in study by Hallel et al.¹² Synovial chondromatosis is a rare condition in which foci of cartilage develop in the synovial membrane of joints, bursae, or tendon sheaths as a result of metaplasia of the sub-synovial connective tissue. Anne C. Brower et al. mentioned in the study that synovial chondromatosis is not to be confused with the chondral and osseous fragments seen in a patient with severe osteoarthritis. Our study also showed similar case where in loose bodies were formed in background of osteoarthritis.^{13,14}

Arthroscopic guided synovial biopsies help in direct viewing of the synovial membrane which reveals primary diagnosis especially in neoplastic and infective pathology and provides material for advanced proteomic studies which could eventually lead to better patient management.

CONCLUSION

The present study evaluated those synovial tissues can have a predominant role in histomorphological diagnosis of different kind of arthritis as well as in recognizing early phase of arthritis which may have important therapeutic implications in preventing unnecessary operative intervention of later stages. Synovial biopsy may give conclusive diagnosis where clinical diagnosis and synovial fluid analysis is equivocal.

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