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Original Research Article

The Diagnostic Yield of Excisional Biopsy in Cervical Lymphadenopathy: A Retrospective Analysis of 100 Biopsies in Adults

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Abstract:

This retrospective study evaluates the diagnostic yield of excisional biopsies in 100 adult patients with cervical lymphadenopathy at Patna Medical College Hospital from July 2019 to July 2021. With a definitive diagnosis achieved in 94% of cases, the results highlight the critical role of excisional biopsy in differentiating between benign and malignant conditions, guiding effective clinical management. Notably, malignancies were detected in 37% of cases, and specific infections like tuberculosis in 22%, underscoring the procedure's utility in diagnosing serious underlying diseases. The findings advocate for the continued use of excisional biopsy as a fundamental component in the diagnostic and treatment pathways for patients presenting with unexplained cervical lymphadenopathy.

Keywords: Cervical lymphadenopathy, Excisional biopsy, Diagnostic yield, Clinical management.

Introduction

Cervical lymphadenopathy, characterized by the enlargement of lymph nodes in the neck, presents a diagnostic challenge due to its association with a wide spectrum of diseases ranging from benign infections to serious malignancies. [1] In clinical practice, persistent or unexplained cervical lymphadenopathy often necessitates a thorough diagnostic evaluation to pinpoint the underlying cause, which is crucial for determining the appropriate management strategy. [2,3]

Excisional biopsy of the lymph nodes is a critical diagnostic tool in cases where non-invasive methods such as imaging and fine needle aspiration fail to provide conclusive results. [4] This surgical procedure involves the complete removal of a lymph node for histopathological examination, offering a comprehensive assessment of the lymphatic tissue architecture and cellular composition. [5] The histological analysis can reveal the presence of infectious agents, neoplastic cells, or other pathological changes, thereby providing definitive diagnostic information. [6]

The current study retrospectively analyzes 100 cases of adult patients who underwent excisional biopsy for cervical lymphadenopathy at our institution. This analysis aims to assess the diagnostic yield of the procedure, specifically its ability to identify and differentiate between benign and malignant causes of lymph node enlargement. By examining the outcomes and correlations between clinical presentations and biopsy results, this study seeks to elucidate the role of excisional biopsy within the broader diagnostic workflow. [7]

Furthermore, this research explores the impact of biopsy findings on the clinical decisions made post-diagnosis, such as the choice of treatment modalities and the planning of follow-up care. [8] By providing detailed insights into the types of pathologies uncovered through excisional biopsies and their frequency, the study contributes to a better understanding of the epidemiological patterns of diseases presenting with cervical lymphadenopathy. Through this comprehensive retrospective analysis, the study aims to reinforce the clinical guidelines for managing cervical lymphadenopathy and to highlight the critical role of excisional biopsy in achieving accurate diagnoses in complex cases. [9,10]

Methodology

Study Design: This study employed a retrospective analysis design, examining the diagnostic yield of excisional biopsies performed for cervical lymphadenopathy. The research was conducted by reviewing medical records of patients who underwent this procedure within the specified study period.

Study Population: The study included a total of 100 adult patients who presented with cervical lymphadenopathy and underwent excisional biopsies. All patients were selected from the archives of Patna Medical College Hospital (PMCH), Patna, ensuring a diverse sample representative of the general population attending this tertiary care facility.

Inclusion Criteria

- Adults aged 18 and above.

- Patients who underwent excisional biopsy for cervical lymphadenopathy.

- Patients with complete medical records available for review.

Exclusion Criteria

- Patients below 18 years of age.

- Incomplete medical records or missing biopsy results.

Data Collection: Medical records from July 2019 to July 2021 were reviewed to collect data on each patient, including demographic information (age, gender), clinical presentation, imaging findings, details of the biopsy procedure, histopathological reports, and subsequent management based on biopsy results. The primary outcome measured was the diagnostic yield of the biopsies, categorized by the identification of specific pathologies.

Procedure: Excisional biopsy involved the surgical removal of an entire lymph node, which was then sent for histopathological examination. The biopsy samples were processed and stained using standard histological techniques, and examined by experienced pathologists at PMCH. The diagnostic categories were established based on the histopathological findings, which included reactive hyperplasia, infection, malignancy (primary or metastatic), and other pathologies.

Statistical Analysis: Descriptive statistics were used to summarize the demographic and clinical characteristics of the study population. The diagnostic outcomes of the biopsies were categorized and presented as frequencies and percentages. The relationship between clinical presentation and biopsy results was analyzed using chi-square tests for categorical variables. All statistical analyses were conducted using SPSS software, with a p-value of less than 0.05 considered statistically significant.

Results

The study involved 100 patients, comprising 58 males and 42 females, with an age range from 18 to 75 years. The median age of the participants was 47 years. Most patients presented with symptoms of persistent cervical lymphadenopathy for more than one month, with some reporting associated symptoms such as fever, night sweats, or weight loss.

Diagnostic Yield of Excisional Biopsy

The excisional biopsies performed yielded definitive diagnoses in 94% of the cases. The breakdown of the pathological findings is as follows:

- Reactive Hyperplasia: 35 cases (35%)

- Infectious Causes: 22 cases (22%), including tuberculosis (12 cases), nonspecific lymphadenitis (8 cases), and others (2 cases)

- Malignancies: 37 cases (37%), with 21 cases of lymphoma, 12 cases of metastatic carcinoma (primarily from breast, lung, and oral cancers), and 4 cases of other malignancies.

- Other Pathologies: 6 cases (6%), including autoimmune lymphoproliferative syndrome and sarcoidosis.

Impact on Clinical Management

The results of the excisional biopsy had a significant impact on the clinical management of patients:

- Treatment Changes: In 82% of cases where malignancy or specific infections like tuberculosis were identified, immediate specific therapeutic interventions were initiated.

- Follow-up Procedures: Patients diagnosed with benign conditions such as reactive hyperplasia generally required less intensive follow-up, focusing on monitoring for potential changes in clinical status.

- Referral to Specialized Care: Approximately 40% of the patients, primarily those with malignancies, were referred to oncology or specialized medical services for further treatment.

Statistical Analysis: Chi-square tests revealed a significant association ($p < 0.05$) between the presence of systemic symptoms (fever, weight loss, night sweats) and the diagnosis of malignancy or tuberculosis, underscoring the importance of these symptoms in predicting more serious underlying conditions.

These results emphasize the high diagnostic yield of excisional biopsy in evaluating cervical lymphadenopathy, with substantial implications for guiding appropriate clinical management and improving patient outcomes.

Diagnostic Outcome	Number of Cases	Percentage
Total Cases	100	100%
Reactive Hyperplasia	35	35%
Infectious Causes	22	22%
- Tuberculosis	12	12%
- Nonspecific Lymphadenitis	8	8%
- Others	2	2%
Malignancies	37	37%
- Lymphoma	21	21%
- Metastatic Carcinoma	12	12%
- Other Malignancies	4	4%
Other Pathologies	6	6%
Definitive Diagnoses	94	94%

This table provides a clear overview of the diagnostic outcomes derived from the excisional biopsies in the study, along with the percentage representation of each category relative to the total cases examined.

Discussion

The results of this retrospective analysis underscore the significant diagnostic utility of excisional biopsy in adult patients presenting with cervical lymphadenopathy. [11] With a high diagnostic yield of 94%, excisional biopsy proved critical in distinguishing between benign and malignant pathologies, thereby facilitating targeted therapeutic interventions. Particularly noteworthy is the identification of malignancies in 37% of cases and specific infections such as tuberculosis in 22% of cases, highlighting the prevalence of serious conditions within this patient cohort. [12] The association between systemic symptoms and severe pathologies like malignancy or tuberculosis suggests that these symptoms are reliable indicators warranting aggressive diagnostic and therapeutic approaches. [13-15]

The substantial representation of reactive hyperplasia, accounting for 35% of cases, also emphasizes the need for excisional biopsy to rule out more severe underlying conditions when initial less invasive tests are inconclusive. The clear impact of biopsy results on clinical management, with 82% of patients with identified malignancies or infections receiving immediate specific treatments, demonstrates the procedure's pivotal role in enhancing patient outcomes. [16-18]

Furthermore, the referral of approximately 40% of patients with malignancies to specialized care underlines the importance of a multidisciplinary approach following diagnosis. This study confirms the essential role of excisional biopsy not only as a diagnostic tool but also as a critical component of the management strategy for patients with unexplained cervical lymphadenopathy, thereby supporting its continued use as a standard practice in similar clinical scenarios. [19,20]

Conclusion

The retrospective analysis of 100 excisional biopsies in adult patients with cervical lymphadenopathy at Patna Medical College Hospital demonstrates the high diagnostic yield (94%) of this procedure, effectively distinguishing between benign and malignant conditions. This study reinforces the value of excisional biopsy in guiding appropriate clinical management, particularly highlighting its role in initiating targeted treatments for malignancies and specific infections like tuberculosis. The significant correlation between systemic symptoms and severe underlying pathologies further supports the use of excisional biopsy as an essential diagnostic tool in clinical practice. Overall, this study advocates for the continued reliance on excisional biopsy in the evaluation of unexplained cervical lymphadenopathy to improve patient outcomes through precise diagnosis and tailored therapeutic strategies.

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