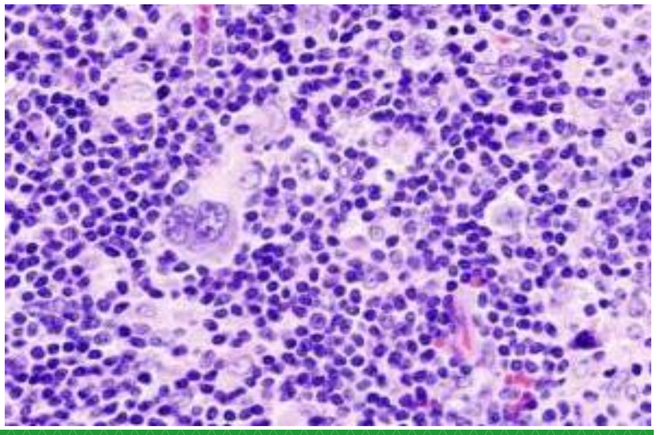

FINE NEEDLE ASPIRATION CYTOLOGY OF BODY MASSES WITH HISTOPATHOLOGICAL CORRELATION: A FIVE YEAR STUDY IN TIKRIT CITY-IRAQ

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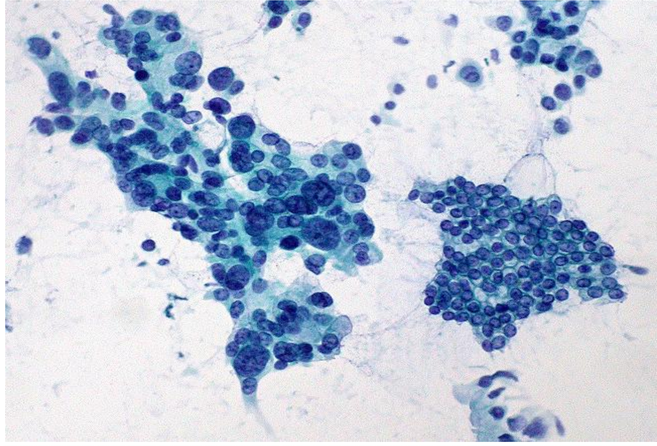


OBJECTIVE

To evaluate the accuracy and diagnostic performance of fine needle aspiration FNA cytology in diagnoses of superficial palpable body masses.

BACKGROUND

Fine needle aspiration(FNA) is a rapid, accurate, minimally invasive & cost effective method for the diagnosis of body masses.Primarily the superficial & palpation guided mass lesions & when FNA is performed by trained cytopathologists. .

In this study we perform FNA with the objective of providing expert FNA services for the clinicians practicing in our the community, and we report the accuracy of fine needle aspiration cytology from different body sites in 1162 cases over almost five years period.

METHODS

We establish a retrospective search of the archive of department of pathology in Tikrit teaching hospital for patients who had FNA cytological diagnosis & histopathological evaluation, during July 2009-June 2013. We assess the accuracy of the FNA findings by comparing the cytological diagnosis from histopathology reports, obtained with incisional biopsy, excisional biopsy or total organ resection. The FNA were performed by pathologists utilizing a 22-24 gauge needles attached to a 10 ml syringe mounted on aspiration device. In most cases two separate passes were made into the lesion with the needle. During each pass, the needle was moved throughout the lesion multiple times at different angles while aspirating. Smears from the aspirate were fixed in alcohol & stained with H & E stain. Cytological diagnoses were classified into: inadequate, benign, malignant, inconclusive(when the smear show adequate cellular material but the material was not diagnostic). These were "atypical" or "suspicious" results in which the difficulty to achieve the diagnosis is usually related overlapped cellular features between benign & low grade malignant lesions. Results where categorized as " inadequate" when the cellular materials was insufficient for evaluation. Patient's clinical informations were obtained including clinician type, patient age, sex, FNA site(breast, thyroid, lymph nodes, lymph nodes, soft tissue, salivary glands, skin & testis), history & clinical findings, FNA results & final histopathological report & whether the FNA diagnosis represent new or recurrent disease.

RESULTS

A total of 1162 patients underwent FNA during the study period, patient age ranged from 9 months -90 years, with median age was 45 years. Out of these 89 cases (7.8%) are nondiagnostic; 1.4% (14 cases) were inadequate & 6.4%(75 cases) were inconclusive. The majority of FNA procedures were performed on female patients (817 females; 70% of the study group).

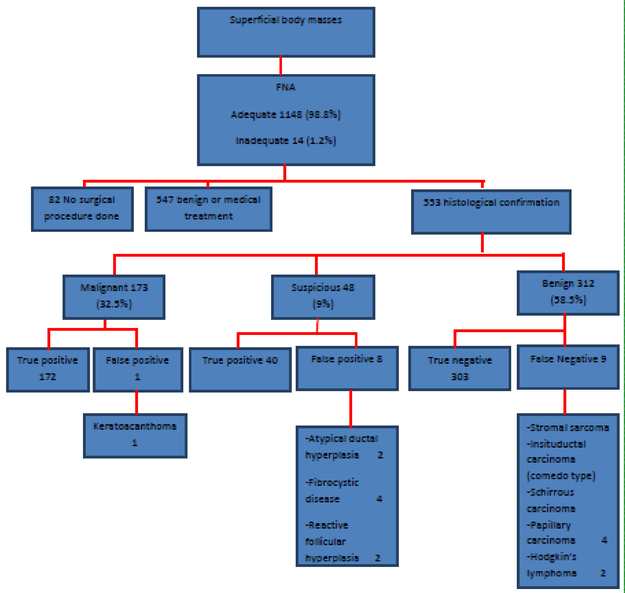
The FNA results according to the site of origin are illustrated in table (1), when the most common site aspirated is the breast (387 cases) followed by thyroid gland(296 cases), followed by lymph nodes (260 cases), soft tissue(134 cases), salivary glands(47 cases), skin(25 cases) & testes(13 cases). The majority of aspirates were benign for each individual body sites (225 out of 387 breast aspirates), 257 out of 296 for thyroid, 148 out of 260 for lymph nodes, 116 out of 134 for soft tissues, 45 out of 47 for salivary glands, 5 out of 13 for testes & 13 out of 25 for skin aspirates. the most common benign lesion was colloid goiter nodules, they were 234 cases(20%), followed by fibrocystic disease of the breast 99 cases(8.5%), reactive follicular hyperplasia 58 cases (5%), soft tissue lipomas 30 cases(2.6%) & pleomorphic adenoma of salivary glands 16 cases(1.4%).malignancy is represented most commonly by carcinoma which represent 100% of breast, thyroid, salivary glands & skin malignancies while in lymph nodes it represent 48%, sarcoma represents 100% of soft tissue malignancies & seminoma represent 100% of testicular malignancies. Indeterminate or nondiagnostic results were divided into inconclusive & inadequate cases. Inconclusive when the cellular material is adequate but nondiagnostic, rendering the diagnosis of (atypical or suspicious) with difficulty to achieve diagnostic results mainly due to overlapping cellular features between benign & low grade malignant lesions. Inadequate or unsatisfactory results were reported when the cellular clusters were insufficient for assessment, adequate aspirate is controversial & several reports recommend identification of at least six cellular clusters each having more than 10 discernible viable cells also one should depend on noncellular features such as the confidence & experience of the cytopathologist performing the FNA with regard to needle placement, resistance of the mass to the needle, and correlation with history & physical findings to determine whether the material obtained is truly representative & adequate(5,6).

Suspicious cases were included with the malignant cases to achieve greater sensitivity, when the suspicious cases also need histopathological confirmation.

In total 533 patients underwent surgical diagnostic procedures for histopathological confirmation of their FNA results are summarize in (table 2). 49 patients of these 533 had inconclusive FNA with subsequent surgical biopsies. In 82 cases either no surgery is done despite an indication by FNA or no available informations. 547 cases(47%) were spared surgery as these patient had benign lesions & receive conservative treatment or on occasions they diagnosed as medically treated malignancy.

Of 533 cases those underwent FNA & also had available histopathological results, 439(82%) had diagnostic results either benign or malignant, and concordant FNA-histopathological results, there were nine cases that have discrepant FNA-histopathologic results representing cases of missed malignancy & one false positive. The sensitivity, specificity, positive predictive value, negative predictive value & accuracy are show in (table 3)

An overall sensitivity for FNA of 97% has been obtained (range, 87-100%), specificity of 97%, PPV of 95.9%, NPV of 97% and accuracy of 96.6%. the sensitivity of thyroid was the lowest, this is because of sampling error in huge multinodular goiter.



SUMMARY

Fine needle aspiration(FNA)is accepted as the diagnostic procedure of choice in the management of superficial palpable body masses. The purpose of this study is to evaluate the diagnostic accuracy of fine needle aspiration with histopathological confirmation when it is performed by experienced hands to get a more reliable results. Highly reliable results can be obtained when patients are referred to specialty-trained cytopathologist for FNA biopsy of superficial palpable mass lesion.

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