Evaluation of Fine Needle Aspiration Cytology (FNAC) in Diagnosis of Head and Neck Swellings in Bab Elsheria Hospital

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Abstract

Introduction: FNAC is believed to be of great benefit as an alternative diagnostic approach to lesions in Head and Neck region. This study aims at evaluating the results of FNAC undertaken in Otorhinolaryngology, Head and Neck Surgery Department, Bab Elsheria Hospital in relation to the International big series.

Subjects and Methods: This is a retrospective study of 42 cases with FNACs performed between September 2004 and April 2006. All patients had both FNAC and Histology done. Patients were classified into 3 groups according to the site of their swellings: (parotid, thyroid and others).

Results: The origin of the swellings in this series was 48% from the parotid gland, 19% from the thyroid gland and 33% from other sites. The first FNAC was only diagnostic in 21 patients (50%). While the 2nd FNAC was diagnostic in 8 patients out of 15 (53.3%). The majority of swellings with positive findings on FNAC in 29 patients had matched the histology results (68.9%). So, the chances of getting diagnosis were about 50 % in either first or second FNAC. The FNAC sensitivity was 69% and its specificity was 80%, which lags behind the International big series.

Conclusion: We need to improve our FNAC results to be compared with the results of International big series.

Introduction

The initial paper concerning FNAC from Memorial Hospital for Cancer by Martin and Ellis (1930). dealt primarily with Head and Neck tumours. The superficial nature of lesions in this area make them easily accessible target for aspiration biopsy (Laurence *et al.*, 2002).

At our institutions, patients with Head and Neck masses are referred to immediate ultrasonographic (U/S) assessment and proceed directly to U/S guided biopsy. This process expedites referral of patients to the appropriate clinical team and eliminates the need for open biopsy. (Kline *et al.*, 1984).

Imaging diagnosis has low specificity for differentiating benign from malignant lesions in Head and Neck, so, a tissue diagnosis remains a standard requirement.

(McGuirt & McCabe, 1978 and Laurence *et al*., 2002*)*

FNAC is widely used in the assessment of patients with Head and Neck masses; it is a safe and inexpensive outpatient procedure with a reported diagnostic accuracy in malignant cases that exceed 90%. Tschammler *et al.* (1998).

FNAC technique has disadvantages, which include high rate of non-diagnostic samples and incomplete classifications of lymphoma. So, the result of lymph node excision biopsy remains the standard diagnostic tool, with all of its hazards as an invasive technique, requires G.A and admission. Patt *et al.* (1993).

The sensitivity of the FNAC means its ability to detect true patients and is defined

by the number of true positives as a percentage of the total with the disease. (Vassallo *et al.,* 1992). And, its specificity means the number of true negatives divided by the total without the disease. (Elvin *et al.,* 1997)

There are many factors that affect the outcome of FNAC, which include the technique of aspiration, the experience of the person who performs it, the size of the mass, the depth of swelling, site of the lesion, image guidance, the proximity to important structures, the vascularity of lump and the expertise of the interpreter. Elmar *et al*. (2000).

Subjects and Methods

It is a descriptive retrospective study of 42 cases with FNACs performed between September 2004, and April 2006 in Otolaryngology Department Bab El-Sheria Hospital for lesions in Head and Neck. All patients had both FNAC and histology done. The later was used as a gold standard. Those patients were classified into three groups according to the site of lesion; parotid, thyroid and others. The results of FNAC and histology were compared, either matched or mismatched.
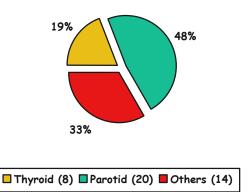
Results

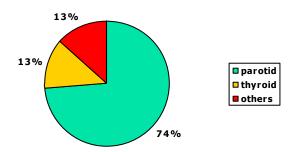Fig. 1: Shows the site of FNAC: 48% from parotid 33% from other sites and 19% from thyroid origin,.

Fig. 2: Shows the percentage of site of distribution in 15 patients who underwent 2nd FNAC, as the 1st one was not diagnostic. As shown the parotid origin was presented in 73.3%, thyroid in 13.3% and other sites in 13.3%.
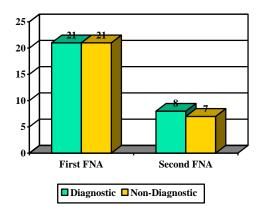

Fig. 3: The 1st FNAC was 50% diagnostic. The second FNAC was diagnostic in 53.3% of samples (8 patients)
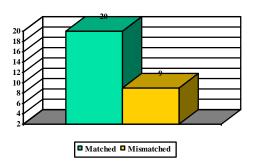

Fig. 4: The whole percentage of the FNAC diagnosis of 29 patients compared with histological results for the same patients was, 68.9% matched results and 31.03% mismatched ones.
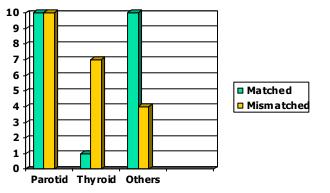
Fig. 5: according to the site of distribution the percentage of matched and mismatched FNAC compared with the histological diagnosis was 71% in other sites, 50% in parotid, and 13% in thyroid.

Finally, the sensitivity of FNAC in all sites was 69%, and its specificity was 80%.

Discussion

As shown in the results, the site distribution of FNAC samples was: 48% from the parotid gland, 33% from other sites and 19% from the thyroid gland. These findings were different to the findings of Martha *et al.* (1998) , who cited that the thyroid gland was the commonest site for swellings in neck followed by the parotid gland then other sites. But this difference can be attributed to the environmental factors that play role in the nature of neck swellings.

In this study the 1st FNAC was diagnostic in 21 patients out of 42 (50%). Among the non-diagnostic patients, there were 15 patients who underwent 2nd FNAC. In the remaining 6 patients we had to rush and deal with situation by open surgery to save the time, that's because we felt at the time that these cases were clinically highly suspicious of malignancy. So, there were only 15 patients out of 42 (35.7%) who underwent 2nd FNAC. The percentage of undiagnosed 1st FNAC was much higher than reported in other studies, where it was from 9.3% - 15% in 811 patients in Bain *et al. (*2000) study, and was only 6% in *Jain et*

al. (1999) study. The lack of diagnostic accuracy in our study can be attributed to many factors as; characters of the lesions and experience of the interpreter, which needs more in depth investigation.

In this study the 1st FNAC was diagnostic in only 50% of patients, and the 2nd FNAC was diagnostic in 53.3% of them. The percentages in our results are much lower than others concerning this issue. In 1990, Flynn *et al,* reported that 95% of FNAC were diagnostic in the 1st time, and this percentage improved to 98% in the results of the 2nd one. But still we recommend the 2nd FNAC if the 1st one was non conclusive, as it will save 53% of patients from the hazards of open surgeries. This is also supported by Skykhon *et al.* (2004) *,* who reported that 2nd FNAC is a useful technique and should be considered under certain circumstances, especially in cases of non-diagnostic or inquiry results.

The results of FNAC diagnosis compared with histological diagnosis in 29 patients were matched in only 20 patients (68.9%). These results were much lower than the rates mentioned by Carroll *et al.* (1998), that the accuracy of FNAC is 95% in 78 patients.

As regard the accuracy of FNAC according to the site of lesion, it was: 50% in parotid gland, in this study. However, there was no differentiation between malignant and benign lesions, which was in need for further investigation, as Contucci *et al.* (2003) reported that the accuracy of FNAC in parotid gland differs in benign lesions (95.1%), than in malignant lesions (> 50%). In thyroid lesions the percentage was 13%, in contrast to 83% in Hossein and John, (1993)*.* This discrepancy can be attributed to lack of use of the world wide established THY classification for thyroid lesions in Bab El-Sheria Hospital. While the accuracy in other sites in the neck was 71%, this is nearly the same as the results of other researches we used in comparisons. These other sites, which are a broad term, need more specific classification for better results.

In this current study the sensitivity of FNAC was 69%, in contrast with 95%

sensitivity that reached up to 100% when lymphoma excluded cited by El-Hag, (2003)**.** While, its specificity was 80%, which is lower than 98% mentioned by Shein *et al.*, (2002)**.** Again, these low sensitivity and specificity can be attributed to the mentioned before factors.

Conclusion

- ➢ FNAC of sites other than the parotid and thyroid glands showed the highest percentage of matching, whereas thyroid FNAC produced the poorest results
- ➢ Large number of patients needs 2nd FNAC and the results are same (53.3%)
- ➢ There is no good filing system in Bab El-Sheria hospital with full data about the patients, so all of these data were collected by the researchers

Recommendation

- ➢ FNAC is a useful technique in diagnosis of all Head and Neck lesions, this study recommend it as one of the routine workup of every patient with one of these lesions.
- ➢ We should improve the personal and technical skills in Bab El-Sheria Hospital to optimal level to improve our FNAC results in both 1st and 2nd samples.
- ➢ The 2nd FNAC is a must in all patients with non-diagnostic 1st FNAC
- ➢ There should be dedicated cytologists, in the Hospital, which need a lot of training and improvement of their learning curve.

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تقييم الشفط الخلوي بالإبر الدقيقة لتشخيص أورام الرأس والرقبة في مستشفى باب الشعرية

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يعتقد أن طريقة الشفط الخلوي بالإبر الدقيقة ذات فائدة كبيرة كمدخل لتشخيص أورام الرأس والرقبة.

في هذه الدراسة استخدمت الطريقة المذكورة لتقييم نتائج جراحات الرأس والرقبة التي تمت في مستشفى باب الشعرية قياسًا على المستويات العالمية.

وقد شملت الدراسة 42 حالة لجراحات أجريت في الفترة من سبتمبر 2004 إلى إبريل 2006 حيث كانت النتائج الهيستولوجية والباثولوجية لعينات بطريقة الشفط الخلوي بالإبر الدقيقة تجمع أرشيفيًا تراجعيًا.

وقد تم تقسيم المرضى إلى ثلاث مجموعات تبعًا لموضع الورم، غدة نكفية (48%)، غدة درقية (33%)، أماكن أخرى (19%).

كانت النتائج من الشفط الخلوي مطابقة للتشخيص الهيستوباثولوجي في 21 حالة أجري فيها أخذ العينات بالشفط الخلوي في المرة الأولى للفحص.

أعيد أخذ عينات من 15 حالة للفحص مرة أخرى حيث تطابقت نتائج الفحص بهذه الطريقة مع التشخيص الهيستوباثولوجي في 8 حالات (53.3%).

وعلى هذا كان التشخيص بطريقة الشفط الخلوي بالإبر الدقيقة مطابقًا للتشخيص بالطرق الهيستوباثولوجية في 29 مريض بنسبة 68.9% وقد كانت الطريقة مطابقة للطرق الهيستولوجية في 50% تقريبًا من الحالات عند إجرائها لمرة واحدة أو إعادتها للمرة الثانية وقد تم حساب حساسية الطريقة فكانت 69% وتخصصها 80% وتعتبر هذه القيم أقل مما نشر عالميًا حيث تم مناقشة أسباب ذلك.