Thyroid ultrasound and fine needle aspiration in one-stop surgical outpatient clinic: a 3-year audit

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Introduction:
Thyroid ultrasound is a common referral which constitutes more than 600 attendances to our specialist outpatient clinic ever since. Despite the majority of thyroid nodules are benign, there is an increasing trend of thyroid cancer in Hong Kong.

Objective:
To evaluate the performance of fine needle aspiration of thyroid nodules in the surgical outpatient clinic.

Methodology:
All patients with thyroid FNA performed during their outpatient clinic visit from January 2009 to December 2011 were recruited. FNA was performed according to the American Thyroid Association guideline. The decision on palpation directed or ultrasound guided approach was made by attending surgeons. Trained-in-traitional basis were also allowed to perform these procedures under supervision after adequate training. The thyroid FNA cytology was reported according to the Bethesda system. A comprehensive protocol for tracing FNA result was followed. All patients had additional ultrasound guided aspirations. The non-diagnostic rate of trainees improved significantly on the second cycle as 70% of the FNA were performed under USG guidance.

In order to improve quality of thyroid nodule management, an additional ultrasonic machine was installed in the clinic. Trainees were encouraged to use USG for guided FNA. FNA performance was divided into team members regularly. Individual feedback and remedial sessions were given to the poor performers. The second cycle was started in January 2011 after implementation of these changes. The results of the two cycles were compared.

The performance of palpation directed versus USG-guided FNA is shown below:

<table>
<thead>
<tr>
<th>Approach</th>
<th>Palpation directed</th>
<th>USG-guided FNA</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-diagnostic no. (N=455)</td>
<td>123 (27%)</td>
<td>69 (15%)</td>
<td>&lt;0.001 *</td>
</tr>
<tr>
<td>Overall non-diagnostic no. (N=455)</td>
<td>101 (22%)</td>
<td>62 (14%)</td>
<td>0.004 *</td>
</tr>
<tr>
<td>Non-diagnostic rate by palpation directed</td>
<td>15%</td>
<td>10%</td>
<td>0.004 *</td>
</tr>
<tr>
<td>Overall non-diagnostic rate by USG guidance</td>
<td>10%</td>
<td>6%</td>
<td>0.001 *</td>
</tr>
</tbody>
</table>

Discussion:
Trainees pay an important role in the management of thyroid nodules as they have performed almost half of the FNA in the outpatient clinic. As new trainees will be rotated to our team on a half year basis, training on FNA techniques and performance review should be regularly employed.

Ideally, on-site cytopathological support will increase the yield of FNA and decrease non-diagnostic aspirates. However, this service is not available in our centre. The use of ultrasound guidance for FNA will improve the diagnostic accuracy. Trainees are encouraged to use them whenever possible. In the first cycle, trainees did not perform USG-guided FNA because only one ultrasound machine was available in the outpatient centre. With the implementation of a new portable ultrasound machine in the second cycle, trainee started to perform ultrasound guided aspirations. The non-diagnostic rate of trainee improved significantly on the second cycle as 70% of the FNA were performed under USG guidance.

Although majority of thyroid nodules are benign, an improvement in FNA diagnostic accuracy will decrease the need for diagnostic lobectomy. More operation time can be left for management of suspicious and malignant thyroid malignancy.

Conclusion:
Ultrasound size of the neck and FNA are the essential investigations for thyroid nodules. We demonstrate that the use of ultrasound guidance for thyroid FNA decreases the non-diagnostic rate significantly. Patients with suspicious or malignant thyroid nodules are benefit from one-stop thyroid ultrasound FNA clinic being picked up and operated in a timely fashion.

References: