CytoPage

October 2015 Vol. 1, No 2

Newsletter of the Society of Cytology, Singapore

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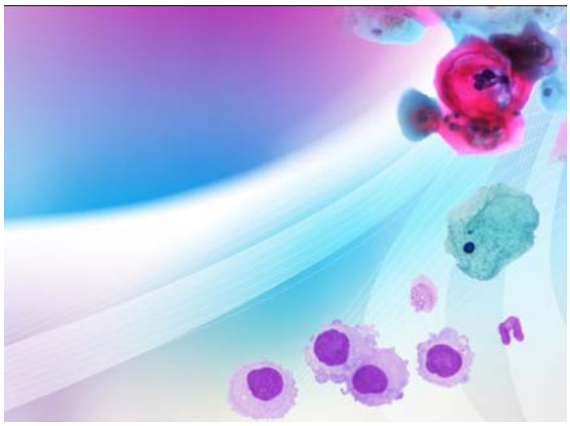


1. From the President's Desk

Dear Colleagues,

It is with great pleasure that I write to inform you that our Society is *one year old*!! We started in November 2014 with the International Academy of Cytology (IAC) course and during this calendar year of 2015 we have managed to hold quite a few activities!

In the 1st Breakfast Workshop which was held on 24th April 2015, Society of Cytology, Dr Issam Al Jajeh, Dr Norman Chan, Dr Sangeeta and myself shared some unexpected and unusual Head and neck FNA cases from SGH[1]. In July, we had a second informal session, where Dr Min En Nga from NUH[2] conducted a morning lecture and slide demo session on Approach to Lymph Node Cytology.

In August, we held a 2-day Gynaecology Workshop with Dr John Smith from the Royal Hallamshire Hospital, Sheffield, United Kingdom and in October, we held our 1st Cytology Seminar with Dr Syed Ali from Johns Hopkins Hospital, Baltimore, USA and Dr R Osamura from the International University of Health and Welfare Mita Hospital, Tokyo, Japan who shared their knowledge with us over two days on various non-gynaecologic cytology topics.

Both these sessions also included individual educational case studies from Sheffield, Baltimore and Singapore. I would like to take this opportunity to thank Dr JE Seet from NUHS, Dr Y Yeoh from KKMH, Dr A Thomas from Parkway Laboratories and Dr S Mantoo from SGH for their efforts in preparing the study material.

All sessions were well attended and yielded good feedback from participants. We would also like to acknowledge the extremely important and generous help of our sponsors including the Lee Foundation, Health Promotion Board for the Gynaecology Workshop, Fischer Scientific and MicroOptics.

We look forward to working with you and serving the needs of cytology professionals in Singapore. We have plenty of plans for 2016 and we hope to see you at the next informal session which we will announce soon.

Before I sign off, I would like to specially thank Ms Lee Hong Song from SGH and Mr Simon Tey from SKGH[3] for all their hard work in supporting the secretariat and helping to organise all the meetings, and Joseph Soo from Microoptics who has been instrumental in helping us with the videomicroscopy

Thank you!

Angela

[1]Singapore General Hospital; [2]National University Hospital, [3]Seng Kang General Hospital

2. Note from Editor

Welcome to the second CytoPage newsletter! As you can see from Angela's message, a lot has happened since our last newsletter, a mere 5 months ago!

In this CytoPage, our Educational Page continues with the theme of oncocytic cells from issue 1, providing some insights on the significance of these cells in thyroid FNAs. Following from there, our CytoQuiz tests this approach in a practical way.

You will also find the answer to Issue 1's CytoQuiz… finally!

In Viewpoint, Ms Tan Zhen Qin (CT IAC) openly shares what it means to be a cytotechnologist in a busy and demanding clinical practice.

Finally, our Picture Gallery highlights some snapshots from the various teaching events that we conducted since our last CytoPage.

We hope you will take home some meaningful points and look forward to your contributions to many more issues in future!

Min En

3. Educational page *(Dr Nga Min En, National University Hospital)*

Approach to Hurthle cell lesions in the Thyroid Gland

The presence of Hurthle (oncocytic) cells is not uncommon in the thyroid aspirats. They may occur in several contexts, ranging most commonly from non-neoplastic conditions to benign or malignant neoplasms. The differential diagnoses include oncocytic change in a colloid or hyperplastic nodule, Hashimoto/lymphocytic thyroiditis, Hurthle cell adenoma or carcinoma, and primary thyroid carcinoma with oncocytic features such as papillary thyroid carcinoma (PTC) or medullary carcinoma (MC).

These differentials fall into most categories in the Bethesda System for reporting thyroid cytology [1]. A further consideration is the possibility of a parathyroid nodule, however, this can be difficult to distinguish from pure thyroid oncocytic lesions without the benefit of clinical and imaging history. This write-up will thus focus on thyroidal lesions.

When Hurthle cells (HCs) are encountered, it is therefore important to answer several questions, which are summarised in the table below.

Bethesda Category	**Benign**	**Benign**	**Follicular Lesion of Undetermined Significance**	**Follicular neoplasm**	**Malignant**
Diagnosis	**Colloid nodule with Hurthle cell change**	**Hashimoto / Lymphocytic thyroiditis**	**Indeterminate between hyperplastic Hurthle cell nodule vs Hurthle cell neoplasm**	**Hurthle cell neoplasm (adenoma, carcinoma)**	**Primary thyroid carcinoma – papillary or medullary carcinoma**
1. Is this a pure Hurthle cell population?	No	Yes / No	Yes	Yes	Yes / No (may be mixed with more classical cells of corresponding tumour)
2. Are lymphocytes present?	No	Yes	No	No	No
3. Is there a history of Hashimoto thyroiditis?	No	Yes / No	Yes	No (usually)	No (usually)
4. Are features of a specific thyroid malignancy present?	No	No	No	No	Yes (Nuclear features of PTC or MC)

In the presence of a mixed Hurthle cell and non-oncocytic follicular cell population and thin colloid, the findings would support a colloid nodule with metaplastic Hurthle cell change. If significant numbers of lymphocytes are identified in the background, particularly if plasma cells are also encountered, then Hashimoto or lymphocytic thyroiditis would be the likely diagnosis. This may also yield non-oncocytic follicular cells.

Hashimoto thyroiditis is often misclassified in thyroid cytology due to the failure to appreciate the presence of lymphocytes (missed diagnosis), or the tendency to overdiagnosis neoplastic conditions (false positive diagnosis). Architecturally, because of the presence of some crowding and occasional microfollicles, an erroneous diagnosis of follicular neoplasm or follicular lesion of undetermined significance (FLUS) may be made. Cytologically, because of the presence of nuclear enlargement and significant variation in nuclear size, chromatin pallor and occasional nuclear grooves, reports may reflect concern for PTC (false positive diagnosis). Useful features favouring autoimmune thyroiditis include the roundness

of the nuclei, the presence of lymphocytes and plasma cells and the clinical or serologic findings.

In the presence of a known history of Hashimoto thyroiditis, even with a pure Hurthle cell population, consideration should be made for a hyperplastic HC nodule. Hence, in this clinical scenario, caution should be exercised before making a diagnosis of neoplasm. A suggested approach would be to classify such nodules within the Bethesda FLUS category, and recommend clinical and radiological correlation, with consideration for repeat FNA after an appropriate interval. These nodules may very likely be non-neoplastic oncocytic nodules rather than neoplasms, and have a low likelihood of malignancy.

A pure Hurthle cell population with little colloid and no lymphocytes or history of Hashimoto thyroiditis would support a cytologic diagnosis of Hurthle cell neoplasm (HCN). Flat sheets may also be seen in HCN, as well as small acinar groupings. The differential diagnoses include hyperplastic / adenomatous HC nodule, Hurthle cell adenoma and carcinoma. Discohesion of oncocytic cells, occasional binucleate forms and the presence of vessels within larger tissue fragments favour a neoplasm. The diagnostic criteria for Hurthle cell carcinoma parallel those of follicular carcinoma, hence, this distinction requires histologic examination. Some authors have also suggested that the presence of cherry red macronuleoli suggest a malignant diagnosis (check De May) may favour a malignant Hurthle cell neoplasm, but in most cases cytology cannot reliably distinguish between adenoma and carcinoma.

The possibility of primary thyroid carcinoma should also be considered. Cells in PTC may sometimes exhibit abundant dense, even squamoid cytoplasm, which may appear oncocytic in nature. However, they do not usually contain enlarged nucleoli, which is sometimes seen in HCNs. The classical diagnostic nuclear features of PTC should thus always be sought. Without the presence of oval, enlarged, grooved, pale nuclei with nuclear inclusions, caution should be exercised in making a direct diagnosis of PTC. Other supporting features would be the presence of thick chewing gum colloid, scattered multinucleated giant cells and in cystic PTC, finely bubbly cytoplasm and psammoma bodies.

Similarly, some cells in medullary carcinoma may contain more abundant dense cytoplasm, which may show some morphologic overlap with oncocytic cells. In MC, the nuclei are often eccentric, imparting a plasmacytoid appearance, and sometimes dual or multiple, and the chromatin shows a consistently stippled, salt and pepper pattern, belying its neuroendocrine nature. Additionally, spindle cells may also be encountered in MC.

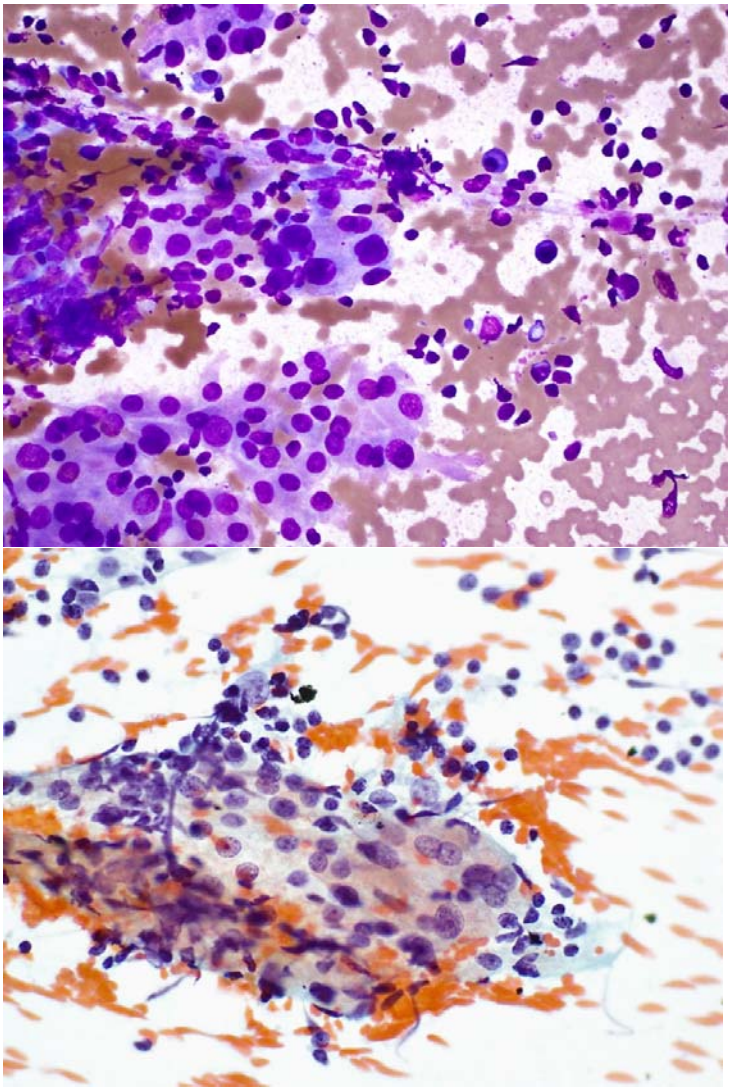
In conclusion, the diagnostic spectrum of Hurthle cell lesions is wide, spanning non-neoplastic nodules to malignant neoplasms. A sound approach would be to ascertain if the Hurthle cell population is pure, look carefully for lymphoplasmacytic cells, exclude PTC and MC and be aware of the clinical findings, in particular, the presence of autoimmune (Hashimoto/lymphocytic) thyroiditis.

References:

1. Ali S and Cibas ES (eds) (2010). *The Bethesda System for Reporting Thyroid Cytopathology. Definitions, Criteria and Explanatory Notes. 1st Edition*, Springer.
2. Orell SR, Sterrett GF and Whitaker D (2005). *Fine Needle Aspiration Cytology. 4th Ed* Elsevier Churchill Livingstone, London, UK.
3. DeMay RM (2011). Chapter 12 In: *The Art and Science of Cytopathology*, American Society for Clinical Pathology.
4. Sudha R. Kini (2008). Chapter 8 In: *Thyroid Cytopathology. An Atlas and Text.* Lippincott Williams and Wilkins, Philadelphia, USA.

4. CytoQuiz

Submitted by Dr Nga Min En, National University Hospital



What is the Bethesda diagnostic category and diagnosis?

A) Atypical; Follicular cell lesion of undetermined significance, Hurthle cell type

B) Hurthle cell neoplasm

C) Benign; Hashimoto /lymphocytic thyroiditis

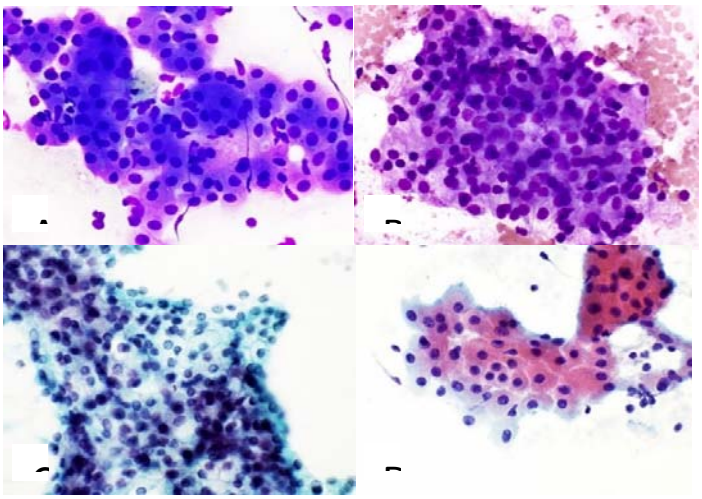
D) Suspicious for papillary thyroid carcinoma

The answer to CytoQuiz will be published in the next issue of CytoPage.

Readers who are registered with the Singapore Medical Council can be accredited for 1 CME point upon completion of CytoQuiz. On completing the quiz, please sign your name on the CME form provided to your department representative, and scan and email it to Dr Sangeeta Mantoo at SSCYTOLOGY2014@gmail.com <mailto:SSCYTOLOGY2014@gmail.com

5. CytoQuiz Answer!

Question Recap (Dr Nga Min En):



The pictures show FNA material from 2 different parotid nodules. Which 2 pictures represent oncocytic cells?

A) A and C

B) B and C

C) A and D

D) B and C

<u>Answer to previous CytoQuiz in CytoPage Vol 1(1):</u>

C) A and D

A and D are taken from an oncocytoma. Note the dense, well defined cytoplasm as opposed to the more delicate cytoplasm of the other two photomicrographs, which depict an acinic cell carcinoma.

6. Viewpoint ***… …*** *Ms Tan Zhen Qin, CT(IAC)*

Ms Tan is a cytotechnologist at the Department of Pathology, National University Hospital

"Choose a job you love, and you never have to work a day in your life" – Confucius

However, 10 years ago my love for Cytology did not exist.

I graduated from Ngee Ann Polytechnic in 2005 with a Diploma in Biotechnology and was eagerly looking for a permanent job. After a year of endlessly sending out my resume, I got a chance to be interviewed by the Department of Pathology, National University Hospital, and was fortuitous enough to be recruited as part of the Cytology Section. I readily took up the offer not knowing what was really in store for me.

For the first few years of training, I was exposed to all variety of Cytology, from preparation of specimens to microscopic work to attending FNA procedures. For a newbie, it was pressurising and frightening because what I am doing would have an indirect impact on the patients. Though the training has been hectic, I was fascinated by Cytology and so my love gradually grew.

After 4 years of training, I got the returns for my love for Cytology – my CT(IAC) qualification in 2010, and thought that I could finally take a breather. But I was wrong! My work as a Cytotechnologist posed great challenges even till now. Some examples are:

1) Picking up atypical cells – this is uncomplicated, but categorising them is tough

2) Not missing a rare atypical or malignant cell

3) Under- and over-diagnosis

4) On-site evaluation of adequacy for FNA cases which require decisive judgment

Fortunately, there are CME (Continuing Medical Education) sessions organised by the department and Cytology workshops which enhance my knowledge and skills in Cytology. Furthermore, the Pathologists and fellow Cytotechnologists in the department are there for me when I need to seek their guidance and teaching. Because of that, I am able to develop professionally as well as a person.

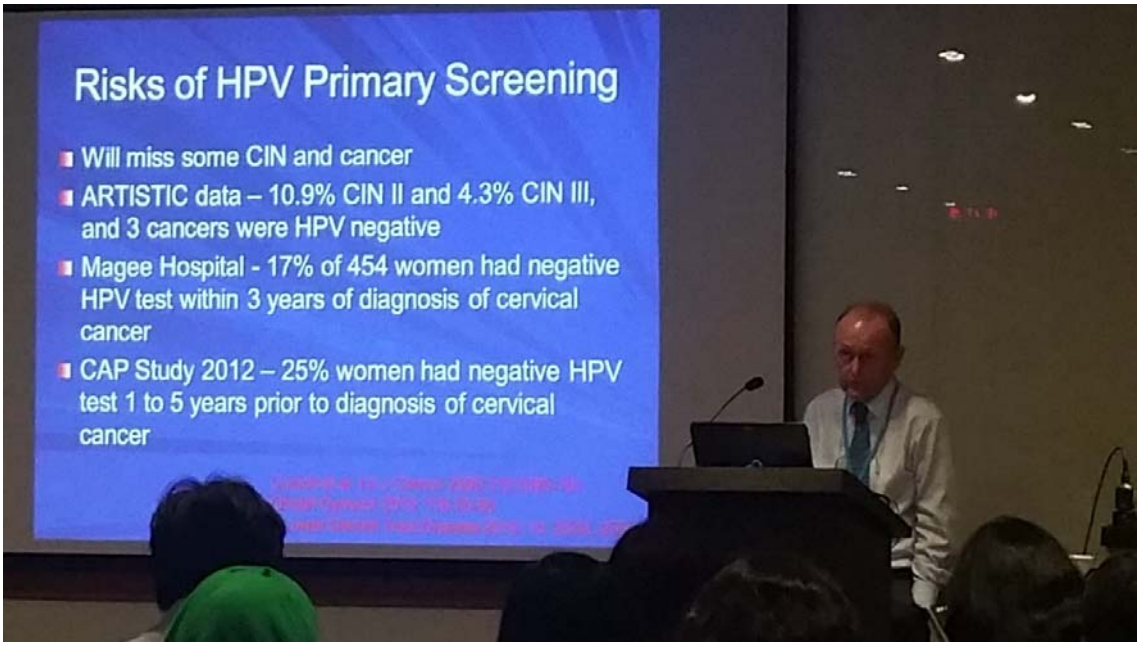
After being a practicing Cytotechnologist for almost 10 years, the most satisfying thing about my work is to be able to apply my knowledge and skills which assist the Pathologists to come to a diagnosis that help in patient's management. Of the lessons I learned, Cytology is never working with cells only but also with people from all walks of life which I have benefited much about insights of life.

" For the young, let me tell you the sky has turned brighter. There's a glorious rainbow that beckons those with the spirit of adventure. And there are rich findings at the end of the rainbow. To the young and to the not-so-old, I say, look at that horizon, follow that rainbow, go ride it." – Lee Kuan Yew, Singapore's founding Prime Minister

Cytology is an ever learning journey and my adventure has just begun!

7. Photo Gallery

2nd Informal session: Approach to Lymph Node Cytology, Dr Nga ME (NUH), hosted at SGH, July 2015



Gynae cytology workshop, Dr John Smith from the Royal Hallamshire Hospital, Sheffield, United Kingdom

Cytology Seminar with Dr Syed Ali from Johns Hopkins Hospital, Baltimore, USA and Dr R Osamura from the International University of Health and Welfare Mita Hospital, Tokyo, Japan. October 2015. Below: Happy participants during a slide microscopy session.