Cytologic Features of High Grade Squamous Intraepithelial Lesions Involving Endocervical Glands on Thin-Layer Cytology

To the Editors:

I read with interest the article by Ozkan and colleagues on glandular lesions of the cervix on thin-layer Pap tests. However, a few clarifications need to be made. The authors commented on the difficulty distinguishing endocervical adenocarcinoma in situ (AIS) from high grade squamous intraepithelial lesion (HSIL) involving endocervical glands. Of the 37 ThinPrep® Pap Tests™ (Cytyc Corporation, Boxborough, Massachusetts, U.S.A.), 15 showed squamous intraepithelial lesions on follow-up cervical biopsy; of these, 4 showed HSIL with endocervical gland involvement. The authors commented that maintenance of cell polarity in HSIL involving endocervical glands is often seen on ThinPrep® Pap Tests™. They stated that the cytologic feature of loss of cell polarity in HSIL involving endocervical glands, previously reported on conventional smears, may not be present on thin-layer slides. This has not been my experience.

A 2-year retrospective study produced 97 cases of cervical intraepithelial neoplasia (CIN) 3, 52 (54%) of which showed endocervical gland involvement by CIN 3. There were also 6 cases of AIS. The Thin-Prep® Pap Tests™ from these cases were reviewed. The architectural features of HSIL involving endocervical glands were similar to those previously reported on conventional smears. A consistent finding of HSIL involving endocervical glands was the loss of central cell polarity and piling within cell groups, a finding not present in AIS. Central cell polarity was maintained in cellular groupings of AIS. In addition to the cellular features present on conventional smears, micronucleoli were present in cells of HSIL involving endocervical glands, and prominent nucleoli were present in AIS. Apoptosis and mitoses were seen in both entities. Characteristic cytologic features of these entities on ThinPrep® Pap Tests™ are listed in Table I.

The cytologic features of HSIL involving endocervical glands and AIS on ThinPrep® cytology are similar to those on conventional smears. However, additional findings include the presence of visible micronucleoli in HSIL involving endocervical glands and the presence of mitoses and apoptosis in both entities. Hopefully, these findings will be of benefit to those who interpret ThinPrep® Pap Tests™.

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Table I  Cytologic Characteristics of HSIL Involving Endocervical Glands vs. Endocervical AIS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HSIL involving glands</th>
<th>Endocervical AIS</th>
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<tbody>
<tr>
<td>Cell pattern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clusters + sheets</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Strips + cell rosettes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gland formations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palisading at cell cluster edge</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Nuclear pseudostratification at cell cluster edge</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Loss of central cell polarity with piling in clusters + sheets</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Maintenance of central cell polarity in clusters + sheets</td>
<td>-</td>
<td>+</td>
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<tr>
<td>Cytologic features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round to oval nuclei</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Cigar-shaped nuclei</td>
<td>-</td>
<td>+</td>
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<tr>
<td>Hyperchromatic nuclei</td>
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<td>Moderately granular chromatin</td>
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<td></td>
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<tr>
<td>Coarsely granular chromatin</td>
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<td></td>
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<tr>
<td>Nucleoli</td>
<td>+/−</td>
<td>+</td>
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<tr>
<td>Vacuolated cytoplasm</td>
<td>+/−</td>
<td>+</td>
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<tr>
<td>Dense cytoplasm</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Mitosis</td>
<td>+</td>
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<td>Apoptosis</td>
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References

**Bilateral Carotid Body Tumor Diagnosed on Cytology**

To the Editors:

The use of fine needle aspiration (FNA) cytology for the diagnosis of carotid body tumors has been controversial owing to the risk of hemorrhage during the procedure. Consequently, many lesions diagnosed as carotid body tumors by FNA cytology are clinically unsuspected. This report documents yet another unsuspected case of carotid body tumor diagnosed on cytology.

A 38-year-old, Chinese male presented to the otorhinolaryngology clinic of University Hospital, Kuala Lumpur, in May 2002 with bilateral neck swellings that he had noticed 3 years earlier and that had been slowly increasing in size. There was no associated pain, history of fever, cough or weight loss. On examination, he was found to have bilateral swellings in the upper cervical region that were recorded as “upper cervical lymphadenopathy.” The left and right cervical swellings were firm and mobile and measured 4.2 × 3.6 cm and 4.1 × 3.5 cm, respectively. The ear, nose and throat (ENT) examinations were essentially normal. FNA performed in the outpatient clinic yielded a bloody aspirate with no cells. Biopsy of the foramen of Rosenmuller ruled out nasopharyngeal carcinoma (NPC).

The patient missed his subsequent appointment but returned in December 2003 to the ENT clinic. At this time the cervical swellings measured 6.0 × 4.0 cm (left) and 6.0 × 5.0 cm (right). The paranasal sinuses were clear. The patient was referred to a cytopathologist for FNA of “bilateral cervical lymph nodes,” with a clinical suggestion of tuberculosis.

Cytologic sampling of the left cervical mass was done by a cytopathologist (G.J.) using the fine needle capillary sampling technique with a 24-gauge needle. As the sample was bloody, the procedure was immediately terminated, with hemostasis achieved by applying mild pressure to the needling site. At this time, pulsations could be palpated over the swelling. The right cervical swelling was then palpated and also found to be pulsatile. The possibility of bilateral carotid body tumors was considered, and it was decided to defer or substitute needling of the right cervical mass with noninvasive investigative modalities.

One smear stained at the bedside with Diff-Quik revealed an organoid pattern of loosely clustered polygonal cells with abundant, pale blue, syncytial cytoplasm, ill-defined cell margins and round or oval nuclei with low nuclear/cytoplasmic ratios (Figure 1, inset). Naked nuclei were seen in the background showing focal atypia (Figure 1). Perivascular and rosette patterns were seen, and a few cells showed reddish cytoplasmic granules (Figure 2). Some dissociated cells showed high nuclear/cytoplasmic ratios, eccentric nuclei and occasional mitoses (Figure 3). A few binucleated forms were present. The remaining smears, stained with May-Grünwald-Giemsa stain, showed a similar picture. A diagnosis of carotid body tumor (paraganglioma) was made and computed tomography (CT) Doppler ultrasound advised.

CT angiography (Figure 4) revealed a 5.8 × 3.9 × 3-cm mass at the bifurcation of the right and a 6 × 4.1 × 3.4-cm mass at the bifurcation of the left common carotid artery. Both masses encased adjacent carotid arteries and enhanced following intravenous contrast, confirming the cytologic diagnosis of carotid body tumor.

**Figure 1** Dissociated naked nuclei. Inset: organoid group of tumor cells with abundant cytoplasm (May-Grünwald-Giemsa stain, ×150).
FNA cytology is often the preliminary diagnostic modality requested of the cytopathologist for neck masses. Masses in the upper lateral cervical region (where carotid paragangliomas occur) are of multifactorial etiology. Tumors of the head and neck metastasizing to cervical lymph nodes, benign and malignant salivary gland lesions, granulomatous lymphadenitis, lymphoma and schwannoma are among the more common causes. Lymph node metastasis of NPC (with a clinically occult primary) usually ranks high on the list of probabilities in Southeast Asia in the Chinese population.

Carotid paragangliomas are exceptionally rare tumors that arise from the carotid body. Despite their usually small size, they are of great clinical importance as 10–40% recur after resection and 10% metastasize widely. Cytologic features in carotid body tumor and extraadrenal paragangliomas have been well described and documented. Single cells, clusters, and microacinar and rosettelike formations are seen in a bloody background. Reddish cytoplasmic granules and cells with intranuclear cytoplasmic inclusions have been observed. Zellballen (rounded aggregates of tumor cells) may be identified in cell blocks. Tumor cells vary from carcinoidlike to spindle to pleomorphic or even bizarre cells. Ganglion cells and cell-in-cell patterns may be seen. A predominantly spindle cell population may lead to misdiagnosis as sarcoma. Distinction from medullary thyroid carcinoma, melanoma, neurogenic tumors and metastatic carcinoma is difficult on purely cytomorphologic grounds. A diagnosis of carotid paraganglioma can therefore be made only by correlating the cytologic with the clinical and radiologic features. Argyrophilic silver stains may help in the identification of neurosecretory granules, and chromogranin immunostain is usually strongly positive.

Although angiography remains the gold standard for diagnosis, noninvasive imaging modalities, such as CT and magnetic resonance imaging, which produce comparable results, have been preferred in recent years due to complications that may occur with angiography.

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Emperipolesis in Pleural Mesothelial Cells in a Patient with Chronic Lymphocytic Leukemia

To the Editors:

Emperipolesis is defined as a process in which lymphocytes adhere to other cells and apparently pass into them. The term has been applied not only to the phenomenon of lymphocytes infiltrating histiocytes in Rosai-Dorfman disease but also to other situations, such as the infiltration of megakaryocytes by neoplastic lymphoid cells. Although Rosai-Dorfman disease in the pleura has been reported, to our knowledge emperipolesis involving mesothelial cells in a hemorrhagic pleural effusion of chronic lymphocytic leukemia (CLL) has not been described in the literature. We report such a case, in which morphologic and immunocytochemical findings led to the suspicion and subsequent confirmation of CLL involving the pleural cavity.

Bloody pleural fluid from a 90-year-old man with a history of keratinizing squamous cell carcinoma of the skin was submitted for cytologic evaluation. Standard cytologic preparations, including air-dried, Diff-Quik–stained smears, ethanol-fixed Papanicolaou-stained smears, and hematoxylin-eosin–stained cell block slides, were examined. Microscopically, there was a paucity of cells other than erythrocytes. There was no evidence of metastatic squamous cell carcinoma. A few distinct, cohesive clusters were seen in a
background of scattered mesothelial cells, macrophages and rare lymphocytes. These clusters were composed of closely packed aggregates of small, monomorphous lymphoid cells with slightly atypical, clumped chromatin and small nucleoli that appeared to have infiltrated larger surrounding cells (Figure 1). The nature and significance of these aggregates were questioned. The larger surrounding cells (usually clusters of 2–4 cells but occasionally single ones) were postulated to be either histiocytes or mesothelial cells that had engulfed lymphoid cells (emperipolesis) and the lymphoid cells to be either reactive or clonal. There were insufficient lymphoid cells in the fluid for flow cytometric lymphoid marker analysis to rule out lymphoma or leukemia.

A panel of immunocytochemical stains applied on the cell block slides revealed calretinin (Figure 2, inset) and cytokeratin (AE1/AE3) positivity (Figure 2) and histiocytic marker CD68 negativity in the larger cells, thereby demonstrating that the larger cells were mesothelial. The intracellular lymphoid cells were positive for leukocyte common antigen (Figure 3). B-cell marker CD79a (Figure 3, inset) stained the majority of lymphoid cells, including scattered cells and at least 1 aggregate, which appeared to be internalized. The T-cell marker CD3 was negative. Stains for kappa and lambda light chains and for CD20 were noncontributory. This staining profile in the lymphoid cells suggested the selective presence of B cells, raising the possibility of a clonal small B-cell population consistent with CLL. The clinician informed us subsequently that the patient had a history of CLL.

Pleural effusion is a rare complication of CLL. The fluid, unlike that in the present case, typically contains an abundant, monomorphous population of small lymphoid cells. Lymphoid cells engulfed by macrophages are a common and nonspecific phenomenon (“pseudo-LE” cells), usually involving a single lymphoid cell. Hemorrhagic pleural effusions in CLL such as in the present case have been reported, but mesothelial emperipolesis has not.

For several reasons, these findings are of interest. This entity differs from Rosai-Dorfman disease, in which benign lymphocytes infiltrate histiocytes, rather than mesothelial cells. Moreover, the lymphoid cells are morphologically atypical and immunocytochemically consistent with CLL. Mesothelial cells are mesoderm-derived epithelial cells. Under normal circumstances, they form a single layer of flat cells. It has been suggested that mesothelial cells can acquire the phagocytic properties of macrophages. Since the membrane composition of CLL cells may be altered, it is possible that these cells would be considered foreign, thereby stimulating phagocytosis by mesothelial cells. It is also possible that CLL cells may infiltrate the pleura by a nonphagocytic mechanism and become surrounded and/or internalized by ≥ 1 mesothelial cells, leading to the mesothelial-lymphoid aggregates observed in this specimen.

The findings described are apparently rare; whether or not they constitute a pathognomonic feature of CLL or another lymphoid neoplasm awaits the discovery and evaluation of additional cases.

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References


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ations, including the characteristics of the population screened, the costs and availability of materials used, health personnel pay, and logistic support, also have a great impact on the final cost-effectiveness.

The Cervical Cancer Screening Program of Paraná (CCSPP) adopted a quality control method based on the review of all abnormal and unsatisfactory smears combined with 10% of negative smears. The quality control model adopted was based on previous experiences but with adaptations considering local particulars. A total of 65,753 smears were reviewed between October 1997 and July 1999, in which 55,585 (84.5%) were negative for epithelial abnormalities. The agreement rate between the primary diagnosis and the reviewer diagnosis was 97.04%, with a $\kappa$ value of 0.888 (95% CI 0.885–0.891). The main objectives of the quality control model adopted were: (1) to identify the possible causes of the errors in each diagnostic category, permitting specific educational measures; and (2) to monitor individual performance and provide daily feedback. Although some false negative cases were detected, allowing proper revision of the management of these patients, the focus of the quality control model was educational measures.

Comparisons between the 10% rescreening and the rapid screening methods keep the focus on the superior or ability of the later to detect false negative cases. The primary goal of the 10% review method is to raise the quality of screening by monitoring and allowing further educational measures and not to detect false negative cases. Some authors stated that a 10% sample may not be representative enough to detect failures. The 65,753 smears reviewed in the CCSPP represent 11.13% of the total smears taken (590,538) during the study period. From these 65,753 smears reviewed, in 1,858 (2.91%) cases the primary and review diagnosis were in disagreement. Table I shows the sample size needed to achieve preestablished values of error relative to the number of smears in disagreement, using a 95% CI.

The sample fraction of smears reviewed in the CCSPP was 11.13%, representing a relative error of 4–5% and a 95% CI of the percentage of smears in disagreement of 2.91% ± 0.113–0.141. The sample fraction of 11.13% was demonstrated to be relatively representative and was sufficient to allow inferences from specific diagnostic categories and further specific interventions.

The model of 10% adopted in CCSPP was preferred because there is no evidence that the potential benefits of rapid screening are cost-effective and there is considerable variation in the performance of rapid screening, with little attempt to standardize the method. A meta-analysis of 6 published studies found that 2.9% (95% CI 0.0–5.8%) of abnormal smears were only detected on rapid screening. Brooke et al. used the rapid screening method on 86,881 slides and found that 12 slides that received a final report of high grade abnormality were detected only on rapid screening, representing one extra high grade abnormality per 7,240 slides screened. The cost at which these extra abnormal smears can be detected is still to be determined. Some authors reported unsuccessful experiences with rapid screening. They stated that the low pickup of abnormalities and the delay in issuing the report to the referring practitioner do not justify the routine practice of rapid screening. Some aspects of rapid screening are still under discussion, such as the time used to screen the slide, the individual limits of the daily workload, prescreening versus rescreening and the pattern of slide screening (random, turret or step).

The experience with CCSPP demonstrated that the 10% review quality control method is effective in achieving its established goals. The focus on educational measures to minimize the possibility of errors, primarily false negative cases, is a traditional and relatively inexpensive strategy that proved to be of great value. Rapid screening seems to be a promising method, but further investigations need to be done to assess the cost-effectiveness of its advantages.

<table>
<thead>
<tr>
<th>Table I</th>
<th>Sample Sizes Needed to Achieve Established Values for Error Relative to the Number of Smears in Disagreement, Using a 95% CI</th>
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<tbody>
<tr>
<td>Relative error (%)</td>
<td>Absolute error (%)</td>
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<tr>
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<tr>
<td>7</td>
<td>0.197</td>
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<tr>
<td>5</td>
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</table>

Relative error = 95% CI error relative to the number of smears in disagreement; absolute error = 95% CI error relative to the total number of smears reviewed; sample fraction = percentage of sample relative to total number of smears screened.

References

New Cytologic Features of Solid and Papillary Epithelial Neoplasms of the Pancreas

To the Editors:
Solid papillary cystic neoplasms (SPENPs) of the pancreas are relatively rare tumors of low malignant potential that occur in young women. The histopathologic features, which are specific and diagnostic, are mirrored by the fine needle aspiration cytomorphology. The cytological features of a case of solid and papillary epithelial neoplasm of the pancreas that was diagnosed recently in our institute on fine needle aspiration cytology were similar to those described in earlier reports.1-4 Richly cellular smears showed numerous slender papillae with fibrovascular stalks. The blood vessels in the core were hyalinized. When seen en face they exhibited a pseudorosetelike appearance (Figure 1). Tissue fragments and single cells were in abundance. The tumor cells were bland, with a variable amount of eosinophilic cytoplasm and peripherally placed nuclei. Intracytoplasmic eosinophilic inclusions were seen in 1% of the tumor cells. Foamy cells and multinucleated giant cells were noted (Figure 1). An additional feature observed in this case and not

Figure 1 Papilla seen en face and appearing as a pseudorosette with a single layer of cells studded around a hyalinized blood vessel (Leishman-Giemsa stain, x 40).

Figure 2 Dumbbell-shaped nuclei were a feature of 10% of the cells. Inset: dumbbell-shaped nuclei (hematoxylin-eosin, x 40).
reported in previous studies was the presence of dumbbell-shaped nuclei, seen in 10% of the cells (Figure 2). The diagnosis of SPENP was confirmed on histopathology.

We presume that the dumbbell-shaped nuclei, not described in earlier literature, may be responsible for the nuclear grooves seen on histology in cases of SPENP.

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References

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Yolk Sac Tumor of Childhood: Diagnosis on Fine Needle Aspiration Biopsy

To the Editors:
Malignant germ cell tumors constitute approximately 3% of neoplasms in children; of them, yolk sac tumor (YST) (endodermal sinus tumor) is the most common. The most common primary site is sacrococcygeal, followed by testicular, ovarian, vaginal and pelvic region. YST is the most common testicular tumor of childhood and occurs primarily in children <2 years old.

The characteristic cytomorphologic findings of metastatic germ cell tumors and YST have been described in few articles. In children with gonadal germ cell tumors, correct assessment of cytomorphologic features is important since effective treatment is available for such tumors. An elevated serum α-fetoprotein (AFP) value is one of the most important supportive clinical findings in diagnosis and follow-up, and it has been suggested that production of specific proteins by YST may represent better differentiation of this neoplasm.

In a retrospective study, we tried to elucidate various cytomorphologic features of pure YST in 6 pediatric cases that we came across over 4 years (1998–2002). The patients ranged in age from 1 to 5 years at the time of hospitalization. All the cases presented clinically with a rapidly growing mass at different sites (pelvic mass, 2 cases; intraabdominal, retroperitoneal, sacrococcygeal and testicular, 1 each). Ultrasonography (USG) and computed tomography (CT) revealed the exact size and site of the mass and the status of adjacent structures.

Direct as well as image-guided (CT/USG) fine needle aspiration (FNA) smears obtained from all cases were moderately to highly cellular. FNA smears were characterized by a variable mixture of several distinct cytologic patterns. Tumor cells were arranged mostly in papillary groups (Figure 1) and tight cell clusters (Figure 2) and formed acinar structures in places. The tumor cells showed enlarged, moderately pleomorphic, hyperchromatic nuclei, some containing 1–2 nucleoli and a moderate amount of cytoplasm. The majority of cells displayed cytoplasmic vacuolation, displacing the nuclei eccentrically. In a few areas syn-
cytial clusters of cells with indistinct cell borders and markedly vacuolated cytoplasm were also noticed. Occasionally some of the tumor cells exhibited intracytoplasmic droplets of pink, homogeneous material. Schiller-Duval bodies were not identified. The background was mucoid and contained scattered foamy macrophages. It was observed that pediatric YST resembled the adult type cytologically, but the cells characteristically formed papillary clusters, and cytoplasmic vacuolation was more prominent.

In 4 cases, histologic and serologic results were available and correlated with the cytologic diagnosis. Preoperatively the AFP level was raised in 4 cases (382–18,052 IU/mL), while β-human chorionic gonadotropin and other laboratory data were within normal limits. A tentative diagnosis of malignant germ cell tumor with yolk sac differentiation was rendered. Histology revealed classical papillary-alveolar glandular structures, microcystic areas (represented in FNA smears by papillary structures), myxomatous areas (syncytial clusters on FNA) and Schiller-Duval bodies. In some foci there were droplets of periodic acid–Schiff-positive, diastase-resistant globules both extracellularly and intracellularly, representing AFP and thus confirming the diagnosis. After the institution of chemotherapy, monthly measurement of AFP was done to assess residual disease or recurrence. In the absence of a surgical specimen, the clinical findings, together with FNA findings, strongly supported the diagnosis of YST in the remaining 2 cases. All postoperative values of serum AFP returned to normal (< 20 IU/mL).

Differentiation from embryonal carcinoma and seminoma/dysgerminoma could be confidently done with the use of a detailed description of the cytomorphologic features of YST on FNA smears because most of the diagnostically important morphologic features of YST seen in histologic sections could also be identified in FNA smears. In addition, the serum AFP level offered supportive evidence for the diagnosis and helped monitor the treatment response.

Thus various morphologic features of YST found on FNA biopsy and the serum AFP level can be of help in the preliminary diagnosis and planning of further diagnostic studies and in therapeutic intervention.

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References

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Keywords: yolk sac tumor; aspiration biopsy, fine-needle; child.