Letters to the Editor

Rehydration of air dried smears: application in body cavity fluid cytology

Two types of smears are commonly used for cytological examination of body cavity fluids: (i) wet alcohol-fixed, Papanicolaou stained or haematoxylin and eosin stained smears; and (ii) air-dried Romanowsky stained smears.^{1,2} We discuss our improvement on the alcohol-fixed smear technique.

Wet-fixed Papanicolaou stained smears have some disadvantages. Floating of the cells off the slide is a not uncommon occurrence. Albuminisation of the slides to prevent this, however, gives the smears a heavy green background. The nuclei are sometimes, particularly in adenocarcinoma with prominent morula formation, stained rather dark which obscures detailed nuclear morphology (fig 1a). The central or thicker areas of a cell cluster are often artefactually stained orange rather than green. Air-drying artefacts are quite common.

In our institute we use the air-dried rehydration technique for fine needle aspiration cytology smears.³ In view of the fact that body cavity fluids are good nutrients, and that the cells suspended in the fluid should be viable just like aspirated tissue we tried the same technique on fluid specimens.

Centrifuged, concentrated cell suspensions were spread on to albuminised glass slides. The slides were dried at room temperature. As soon as they were dry they were rehydrated for 30 seconds in 0.9% sodium chloride solution and finally fixed in 95% ethyl alcohol. They were then stained with haematoxylin and eosin. Two control smears were prepared for each case, one air-dried and rehydrated as above and stained with

Papanicolaou stain, and another wet-fixed and stained with Papanicolaou stain as usual.

Of 300 cases examined over three months, haematoxylin and eosin stained rehydrated air-dried smears offered several advantages: the nuclear morphology was better than wet-fixed Papanicolaou-stained smears; the nuclei were crisper, the chromatin pattern clearer, and nucleoli more conspicuous. In thick cell clusters staining was still uniform and cells could be "seen through" (fig 1b). The background was very clear; unexpectedly the albumin did not take up haematoxylin and eosin.

On the whole, these slides were more pleasant to look at. The only disadvantage of which we are aware up to now is the extra time needed for air drying and rehydration.

Rehydrated air-dried Papanicolaou-stained slides were better than wet-fixed smears but not as good as those stained with haematoxylin and eosin.

We feel that the availability of a crisp chromatin pattern for examination in difficult cases may help in deciding whether the lesion is a malignant or a reactive process, and in our institute, rehydrated air-dried smears are used routinely to complement wet-fixed and air-dried smears.

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References

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- Koss LG. *Diagnostic cytology and its histopathologic bases*. Vol. II. Philadelphia: JB Lippincott Co, 1979:911-70, 1187-242.

Figure (a) Cluster of adenocarcinoma cells from a pleural fluid smear fixed wet and stained with Papanicolaou.
(b) Another cluster of adenocarcinoma cells from the same case. The smear was air-dried, rehydrated, and stained with haematoxylin and eosin.

- Chan JKC, Kung ITM. Rehydration of air-dried smears with normal saline: application in fine-needle aspiration cytologic examination. *Am J Clin Pathol* 1988;89:30-4.

False positive bromide partition test in lymphomatous meningitis

The bromide partition test is still advocated for the diagnosis of tuberculous meningitis.¹ The reliability of this test has been established in comparative studies of patients with tuberculous meningitis and acute viral lymphocytic meningitis. A low (<1.6) blood: cerebrospinal fluid (CSF) ratio has good predictive value for tuberculous meningitis, especially in countries where there is a relatively high incidence.²

Many cases of chronic meningitis in patients without AIDS do not have an infectious aetiology, but tuberculous meningitis must be included in the differential diagnosis.^{3,4} The usefulness of the bromide partition test in this clinical setting has not been reported. I have recently seen a case in which the result was misleading.

Case report

A 62 year old woman with a four week history of depression, anorexia, and weight loss was admitted to hospital following the onset of agitation, confusion, and dizziness. She had photophobia and papilloedema with non-specific electroencephalogram abnormalities but a normal computed tomography scan. Her cerebrospinal fluid cell count was $58 \times 10^6/l$ (predominantly lymphocytes) and the protein concentration was 1.0 g/l. Cerebrospinal fluid glucose was 30% of the blood concentration. Tests for acid fast bacilli, cryptococcal antigen, and antibodies to syphilis, borreliae, and toxoplasma were negative. There were no clinical or haematological pointers to neoplastic disease; the erythrocyte sedimentation rate was 8 mm and a Mantoux test was negative with 1:10000 PPD.

The patient remained confused and feverish (up to 38°C) for the next three days without any specific treatment being given. Examination of a second cerebrospinal fluid sample gave essentially the same results; the cytological appearance of the lymphocytes did not suggest that any of them was malignant. Treatment with acyclovir was started but there was no clinical response after a week; herpes simplex antibodies were not detectable by radioimmunoassay. Antituberculous chemotherapy (rifampicin, isoniazid, and pyrazinamide) was therefore started.

One week later, with no clinical