

Technical method

Evaluation of lymph node imprint in rapid diagnosis of lymph node biopsy specimens

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Most of the information that is currently known about cellular changes in disease processes is from the microscopic study of fixed, dehydrated, and embedded histological sections. Recent advances in cytology indicate that there are certain advantages to be gained from the study of cells that have been detached from their normal environment, as certain distinctive features are more readily identified in isolated cells than in an organised cellular aggregate.¹ Dudgeon and Patrick² described the use of cellular preparations made from scrapings of fresh tissue. In this way, Dudgeon and Barrett³ studied large numbers of tumours and concluded that accurate identification was possible. Sunberg⁴ used imprints of lymph nodes in the diagnosis of various pathological processes. More recently, Tanapatchaiyapong⁵ has introduced a modified lymph node imprint technique by rolling a glass slide surface over the cut surface of a lymph node and staining it with a modified concentration of Wright-Giemsa stain. He claimed to have achieved excellent results.

In Nigeria access to rapid histological diagnosis of enlarged lymph nodes is limited, and we have found that the lymph node aspiration, or imprint method, in experienced hands, is useful for reaching rapid diagnosis in some cases in our hospital. This study was therefore undertaken to assess the value of lymph node imprint examination as a rapid method of accurately diagnosing lymph node lesions.

Subjects and methods

The study comprised 50 consecutive non-leukaemic patients with enlarged lymph nodes, which were not obviously due to a localised primary infection site, who were attending the medical outpatient clinic.

After examination they were referred to the same surgeon (SAA) for lymph node biopsies. All the biopsies were performed under local anaesthesia, except for four children who required general anaesthesia.

The lymph node was excised, bisected, and the bisected surface lightly applied (imprinted) on two clean glass microscope slides. The slides were fixed in methanol for 15 minutes and then stained by the May-Grunwald-Giemsa method. They were all examined by the same haematologist (OOA). The bisected specimen was fixed in formalin and sent to the histopathology laboratory where it was processed by the usual histological methods. Haematoxylin and eosin stain was routinely applied, and where necessary, supplemented with Giemsa (for non-Hodgkin's lymphoma), or Ziehl-Neelsen stains (for tuberculosis). These were then examined by the same histopathologist (VPNM). The histopathological diagnosis in each case was regarded as the standard against which the accuracy of the lymph node imprint diagnosis was judged.

Results

The imprint and histological diagnoses were identical in 33 (66%) cases. The degree of correlation between the results of both methods was significant ($r = 0.82$; $p < 0.01$).

The Table shows the histopathological diagnoses in all 50 cases. The level of matching of the imprint diagnosis was 100% for Burkitt's lymphoma 91.67% for Hodgkin's disease, and 84.62% for metastatic carcinoma. There was poor matching, however, in non-Hodgkin's disease (40.0%) and in tuberculosis (30.77%).

Discussion

The value of imprint studies, especially in haematopathology, has been recognised.³⁻⁹ Apart from permitting greater speed in reaching diagnosis, the microscopic examination of imprints has been shown to be useful when operating on malignant tissues.¹⁰

In this study Burkitt's lymphoma, metastatic lymph node carcinoma, and Hodgkin's lymphoma were accurately diagnosed by the imprint method in 100%, 91.67%, and 84.62% of cases, respectively. In our hands the diagnosis of tuberculosis by lymph node imprints was very difficult, especially as the structure of the tubercle was not seen intact. This is possibly because the structure of the tuberculous lesion is disrupted during the imprinting process. Moreover, unlike our experience with Hodgkin's disease where the Reed-Sternberg cell was easily identified,

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Table Agreement between histopathological and imprint diagnoses of lymph node biopsy specimens

Diagnosis	Histology No (%) of cases	Imprint No correctly diagnosed	Correlation %
Metastatic carcinoma	13 (26)	11	84.62
Tuberculosis	13 (26)	4	30.77
Hodgkin's disease	12 (24)	11	91.67
Non-Hodgkin's lymphoma	5 (10)	2	40.00
Burkitt's tumour	3 (6)	3	100.00
Sinus histiocytosis	2 (4)	1	50
Chronic non-specific lymphadenitis	2 (4)	1	50

neither the Langhan's giant cell, nor any other characteristic cell, was readily identified in those with tuberculosis.

Although Burkitt's lymphoma spreading to the lymph node was not a common occurrence in our series, the distinctive characteristics of its cells facilitated recognition.

In patients with non-Hodgkin's lymphoma the cells were usually monotonous lymphoid cells differing little from normal or reactive lymph node cells (lymphocytes), as observed also by Ulmann *et al.*¹⁰ The distortion of the architecture of the lymph node, which is of help in the diagnosis, could not be appreciated by the imprint method, and this drawback probably precluded accurate diagnoses in most cases.

We conclude that the value of lymph node imprint as an isolated procedure is limited to the rapid diagnosis of Hodgkin's disease, metastatic carcinoma of the lymph node, and Burkitt's lymphoma. The value of the lymph node imprint examination, however, should be enhanced if it is regarded as one of a battery of simple diagnostic tests, such as total and differential white cell counts, tuberculin test, and even naked eye appearance of the bisected lymph node. It should then be possible, taking all these results into account, to start the patient on the correct line of treatment in most cases. Apart from its speed in processing, a further advantage of the imprint method is that the materials required for it are simple, inexpensive, and widely available in many hospitals in Third World countries and can thus be commended for

much wider use than is the case at present. Nevertheless, histological confirmation should always be sought, and ideally all histopathologists or haematopathologists should become proficient in the interpretation of both the imprint and the histological sections, as the information derived from both is complementary and can only enhance the accuracy of lymph node diagnoses generally.

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