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Immunohistochemistry in tumour diagnosis--who actually needs it?

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Major developments in the field of immunology especially in the past twenty years have nourished practically all fields of medicine and biology[1]. Following this, conventional histopathological diagnosis has given way to a multidisciplinary approach in which expression of antigen is also taken into account. Widespread interest in the application of imrnunohistochemistry (NC) to the broad field of diagnostic histopathology has largely followed three important developments, i.e., the introduction of enzyme labels such as horseradish peroxidase[2] availability of reliable anti-sera in particular monoclonal antibodies (MABs) against a variety of antigens of pathologic importance[1] and the realization that, contrary to previous belief majority of immunohistochemical tests can be satisfactorily performed on fonnalin fixed paraffin embedded sections[3]. It is now possible to stain for a wide variety of antigens, hormones, tumour markers and immunoglobulins[4,5]. One particular area where MABs have revolutionized histopathological practice is in the field of cancer diagnosis, i.e., classification of tumours, identification of tumour cells, functional properties of tumours and prognosis[6]. The diagnostic application of antibodies has resulted in dramatic reduction of cases diagnosed as undifferentiated neoplasm. Most of these cases are now readily classifiable as either carcinoma, melanoma, lymphoma or sarcoma[6,7]. One of the major diagnostic fields is in lymphomas which can now be accurately sub typed with antibodies to immunoglobin heavy and light chains together with MABs to T and B cell types[4]. Much attention is also been given to intermediate filament proteins (WP) which is the main constituent of cytoskeleton. Five different types of WPs can be distinguished in malignant cells. These include cytokeratins, vimentin, desmin, glial fibrillary acidic protein (GFAP) and neurofilament proteins. The fact that IFPs are distributed in a tissue specific manner enables us for precise tissue and tumour typing[7,8]. An important question usually asked is that who needs to use INC. To be concise, a small district level department of pathology, having only a small number of specimens to process a year may seldomface sufficient diagnostic problems to justify setting up an INC lab. On the contrary a university hospital like ours or a busy cancer hospital cannot afford notto have a reliable NC, laboratory and the expertise to interpret these stains. However, it is important to realize that most diagnostic problems in surgical pathology are currently not resolved by NC, of course it is being practised for over a century without it. But there is no argument that it is a powerful and often essential diagnostic aid while facing a difficult case[9]. Another very important question in our setting is the cost of these tests, which is usually high and no lab can afford to do these tests in routine histology charge. However, where indication is clear and critical with major therapcutic decisions dependent on it, it must be applied. Contrary to the common belief it may sometimes reduce patient's care cost by abrogating the need to perform more costly diagnostic procedures like electron microscopy, scans, etc. For example, in a case of lymph node biopsy revealing a metastatic undifferentiated carcinoma, a positive stain for prostate specific antigen (PSA) will be virtually diagnostic of prostatic carcinoma. Similarly demonstration of estrogen receptors (ER) in a metastatic lymph node cancer in right setting confirms the breast primary. In our lab for instance, NC is most commonly used to make a distinction if lymphoma comes in the differential diagnosis. Distinction may not be crucial for instance in a malignant round cell tumour if lymphoma can be excluded. The reason is that current regimen for other differentials, e.g., embryonal rhabdomyosarcoma, extraosseous Ewing's sarcoma, peripheral neuroepithelioma, paravertebral round cell tumour and malignant small cell tumour of

thoracopulmonary region is the same. In summary, to author's belief this service can best be applied with affordable cost if both clinicians and pathologists clearly understand the need before asking for it and of course if there is a major therapeutic decision dependent on it from where a proper treatment of the patient will follow.

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