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DNA INVESTIGATIONS

Summary of the round table discussion

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It is evident that aneuploidy signals a more rapid progression rate of the tumor, and a more sinister prognosis, as compared with diploid tumors. However, to evaluate the importance and indispensability of DNA studies and their place in the work-up of prostatic cancer, we must try to answer a number of specified questions.

Do the DNA modal values provide any prognostic information in addition to that received by the traditional methods?

Grading from histopathologic or cytologic criteria and assessment of the T-category are generally good indicators of the prognosis. However, the large intermediary group of moderately well differentiated (G2) cancer comprises tumors with a variety of biologic behavior. Ploidy studies enable a subdivision of this intermediary group into subcategories with distinct differences in prognosis. The well-differentiated cancer is usually diploid but occasionally aneuploid. The latter tumors carry a significantly worse prognosis. It can therefore be stated that in certain patient groups, studies of ploidy may add prognostic information to that given by other methods, provided that they are made with an adequate technique. Still they cannot replace cytologic or histopathologic investigations, however.

Which technique is preferable?

The majority of investigations so far have been made with flowcytometric technique. With this method, cell populations with an abnormal amount of DNA are identified in an objective and reproducible way. On the other hand, the measurement is performed on a suspension of unspecified cells giving a faulty result if the sample is non-representative. The flowcytometric study should therefore be

combined with a cytologic evaluation of the sample. The flow technique is the only one which enables identification of near-diploid tumors. These tumors are rare but have an unfavorable prognosis.

DNA measurements on slides have the advantage that identified tumor cells are studied. A smaller number of cells are investigated, compared to flowcytometry and the results, like the limits of normal range, are more difficult to assess. The slide method has a lower capacity than the other technique, at least so far.

In summary, the two techniques appear of approximately the same accuracy and there is no major difference in their costs. Whichever method is resorted to, it is essential to standardize the technique and reference values, and it must be combined with some morphologic investigation, e.g. cytology or histopathology.

Which importance have investigations of tumor ploidy?

Evaluation of the modal DNA values and, when possible, the percentage of proliferating cells is helpful mainly in the initial work-up of small tumors in the prostate. Aneuploid tumors are at risk for a rapid growth and dissemination and aggressive therapy must be considered, the patient's general condition permitting. Diploid tumors will probably have a much slower growth rate. As mentioned above, ploidy studies are helpful especially in G2 tumors but may be useful in G1 tumors as well.

In advanced stages of prostatic cancer and in the follow-up procedure, DNA studies are usually of less value. Other

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parameters like tumor burden, pain, performance status, etc. are more reliable criteria.

For the routine management of prostatic carcinoma, investigations of ploidy can still not be considered indispensable, since information for more common therapeutic decisions can usually be received by traditional investigations like cytopathology, tumor markers, etc. In centers

where prostatic cancer is handled on a larger scale and especially where research on prostatic cancer is carried out, it is recommendable to have access to investigations of tumor ploidy which provides information on progressive potential superior to other techniques available so far. As mentioned above, the procedure, whatever technique is used, must be well standardized.