A RATING SYSTEM AS AN AID TO LYMPHOGRAPHIC INTERPRETATION

M. Luening and K. Raab

Schumanstr - 20/21 Charité/Roentgeninstitut
104 Berlin, GDR

The correctness of lymphographic diagnosis is largely determined by the well-known limitations of this method although it is also dependent, to a considerable degree, on the experience and skill of the examiner. This, in turn, would account for the wide differences we find in the interpretation of lymphograms by different authors.

Thus, one way to improve the results of lymphographic diagnosis would be to elaborate a catalogue listing lymphographic criteria of metastases with an indication of their diagnostic value which might be as aid particularly to the inexperienced examiner in cases where problems of differential diagnosis have to be decided.

Moreover, for our research team a rating system for lymphographic criteria of metastases is needed for the work we do to standardize and optimize the method of lymphographic diagnosis by using computer techniques.

The use of computer techniques requires to have data on the clinical likelihood of the incidence of lymph node metastases and, additionally, to have data, expressed as mathematical terms, on the probability of the occurrence of criteria that are seen in an X-ray picture.

Rating systems have been worked out and tested for lymph node metastases in cases of malignant melanoma and testicular tumours. At the present time other tumours models are being elaborated.
Lymphograms of 251 patients with malignant melanomas and 147 patients with testicular tumours were analyzed. We found 62 cases of lymph node metastases in the first group, and 53 cases in the second.

As analysis of the frequency distribution of the criteria of 50 inguinal and 104 paraaortic metastatic lymph nodes and their lymph vessels was carried out by means of electronic data processing.

A comparative analysis was made of these criteria with those of 80 inguinal and 115 paraaortic non-metastatic lymph nodes. Subsequently, a statistical examination was made of the results obtained using the $\chi^2$ test. At the end of this, 10 criteria remained for both the malignant melanoma and for the testicular tumours that may be used as an indication for the occurrence of lymph node metastases (Table 1 and 2).

As could be expected, both tables show the 3 principal symptoms for the presence of metastases, though in a different order. These are: filling and storing defects, replacement and, enlargement of the lymph nodes.

We regarded the $\chi^2$ values as a measure for the diagnostic value of the individual criteria. On the basis of these a rating system was established and this rating system was used to evaluate all cases of normal and metastatic lymph nodes.

In this analysis an average number of 111.5 points was found for metastases in malignant melanomas, and of 13.6 points for non-metastatic lymph nodes. The difference is, statistically, highly significant.

The scale of the rating system was established as follows:

- 0 - 50 points: normal lymph node
- 51 - 80 points: uncertain
- $\geq$ 80 points: metastatic lymph node

The average number of points found in cases of testicular tumours was 476 for metastatic lymph nodes and 52 for normal lymph nodes.

The rating system, in this case is:

- 0 - 180 points: normal lymph node
- 180 - 220 points: uncertain
- $\geq$ 220 points: metastatic lymph node