Mitotic count (Core)

Multiple studies indicate that mitotic rate in the invasive portion is an important prognostic factor for localised primary melanomas (including very large studies utilizing the methodology for mitotic count determination described below).[1-13]

The number of mitotic figures can vary greatly between different parts of a tumour. For consistency and reproducibility, a standardised method must be used to assess mitotic count.[14] It is recommended that the field diameter of a microscope be formally calibrated using a stage micrometer to determine the number of high-power fields that equates to a 1 mm^2.

In the 8th edition of the American Joint Commission on Cancer (AJCC)/Union for International Cancer Control (UICC) melanoma staging system, the recommended method to enumerate mitotic figures is to find an area in the dermis with obvious mitotic activity (the "hot spot"), and begin the count in this area, then extending the area counted to immediately adjacent non-overlapping high-power fields in a 1 mm^2 area. If no hot spot is identified and the mitotic figures are sparse and randomly scattered, then the count should begin in a field containing a mitosis, then extended to immediately adjacent non-overlapping high-power fields until a 1 mm^2 area of tissue containing melanoma is assessed. When the invasive component of the tumour involves an area <1 mm^2, a 1 mm^2 area of dermal tissue that includes the tumour should be assessed and recorded as a number per mm^2. The number of mitotic figures should be listed as a whole number/mm^2. If no mitotic figures are identified, the mitotic count may be recorded "none identified" or "0/mm^2". This methodology for determining the mitotic count of a melanoma has been shown to have excellent interobserver reproducibility including amongst pathologists with widely differing experiences in the assessment of melanocytic tumours.[1]

It is also recommended in 8th edition of the AJCC/UICC melanoma staging manual that the mitotic count should be assessed in all primary melanomas (as whole number/mm^2) for prognostic purposes.

The data that demonstrated the strong prognostic significance of mitotic count were obtained from the melanoma pathology reports of routinely assessed H&E stained sections. It is therefore not recommended that any additional sections be cut and examined (or immunochemical analysis be performed), in excess of those that would normally be used to report and diagnose the melanoma, to determine the mitotic count (i.e., no additional sections should be cut and examined for the purpose of determining the mitotic count; this includes the situation when no mitotic figures are identified on the initial, routinely examined sections).

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