Perspective and notables

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Why rapid integration?

- Education gap 2016
- Enhance and empower APP
- Provide another vehicle for learning
- Learner driven
- Hematology oncology
- Feedback-Accountability

Aims

- Review the relevance of staging
- Demonstrate how and what of staging
- Show how staging is important for treatment planing and prognosis

Staging

process of determining how much cancer is in the body and where it is located.

Staging describes the severity of an individual's cancer based on the magnitude of the original (primary) tumor as well as on the extent cancer has spread in the body.

Understanding the stage of the cancer helps doctors to develop a prognosis and design a treatment plan for individual patients

Essentials of staging

- **Physical examinations Imaging tests** such as x-rays, CT scans, and MRI scans can show the location of the cancer, the size of the tumor, and whether the cancer has spread.
- **Laboratory tests** that provide information on blood, urine and other fluids and tissues removed from the body.
- **Pathology reports** that can provide information about the size of the tumor, the growth into other tissues and organs, the type of cancer cells and the grade of tumor
- **Surgical reports** from samples removed during surgery can determine the size and appearance of a tumor and provide insights about lymph node and organ involvement.

TNM Classification

- **Tumor (T):** How large is the primary tumor in the breast? What are its biomarkers?
- **Node (N):** Has the tumor spread to the lymph nodes? If so, where, what size, and how many?
- **Metastasis (M):** Has the cancer spread to other parts of the body?
- The results are combined to determine the stage of cancer for each person.

Cancer staging

Most types of cancer have **four stages**: stages I (1) to IV (4). Some cancers also have a stage 0 (zero). Stage 0. This stage describes cancer in situ, which means “in place.” Stage 0 cancers are still located in the place they started and have not spread to nearby tissues.

What does N1 mean in cancer staging?

N1: The **cancer has spread to 1 to 3 axillary lymph nodes and/or the internal mammary lymph nodes**. If the cancer in the lymph node is larger than 0.2 mm but 2 mm or smaller, it is called "micrometastatic" (N1mi). N2: The cancer has spread to 4 to 9 axillary lymph nodes

Early stage

- **Stage 0:** Stage zero (0) describes disease that is only in the ducts of the breast tissue and has not spread to the surrounding tissue of the breast. It is also called non-invasive or in situ cancer (Tis, N0, M0).

  Stage IA: The tumor is small, invasive, and has not spread to the lymph nodes (T1, N0, M0).

  Stage IB: Cancer has spread to the lymph nodes and the cancer in the lymph node is larger than 0.2 mm but less than 2 mm in size. There is either no evidence of a tumor in the breast or the tumor in the breast is 20 mm or smaller (T0 or T1, N1mi, M0).
- **Stage IIA:** Any 1 of these conditions:
- There is no evidence of a tumor in the breast, but the cancer has spread to 1 to 3 axillary lymph nodes. It has not spread to distant parts of the body. (T0, N1, M0).
- The tumor is 20 mm or smaller and has spread to 1 to 3 axillary lymph nodes (T1, N1, M0).
- The tumor is larger than 20 mm but not larger than 50 mm and has not spread to the axillary lymph nodes (T2, N0, M0).
- **Stage IIB:** Either of these conditions:

Locally advanced

- **Stage IIB:** Either of these conditions:
- The tumor is larger than 20 mm but not larger than 50 mm and has spread to 1 to 3 axillary lymph nodes (T2, N1, M0).
- The tumor is larger than 50 mm but has not spread to the axillary lymph nodes (T3, N0, M0).
- **Stage IIIA:** The cancer of any size has spread to 4 to 9 axillary lymph nodes or to internal mammary lymph nodes. It has not spread to other parts of the body (T0, T1, T2, or T3; N2; M0). Stage IIIA may also be a tumor larger than 50 mm that has spread to 1 to 3 axillary lymph nodes (T3, N1, M0).
- **Stage IIIB:** The tumor has spread to the chest wall or caused swelling or ulceration of the breast, or it is diagnosed as inflammatory breast cancer. It may or may not have spread to up to 9 axillary or internal mammary lymph nodes. It has not spread to other parts of the body (T4; N0, N1, or N2; M0).

  Stage IIIC: A tumor of any size that has spread to 10 or more axillary lymph nodes, the internal mammary lymph nodes, and/or the lymph nodes under the collarbone. It has not spread to other parts of the body (any T, N3, M0).
- **Stage IV (metastatic):** The tumor can be any size and has spread to other organs, such as the bones, lungs, brain, liver, distant lymph nodes, or chest wall (any T, any N, M1). Metastatic cancer found when the cancer is first diagnosed occurs about 6% of the time. This may be called *de novo* metastatic breast cancer. Most commonly, metastatic breast cancer is found after a previous diagnosis of early breast cancer. Learn more about metastatic breast cancer.

Tumor profile: molecular testing

- The personalized medicine approach to treating cancer is still a fairly new concept. Precision medicine tools, such as molecular profiling, are still often regarded as a second line of defense, to be used when standard therapies haven't produced results. Biomarker analysis may help you identify potential treatment options, but only your doctor can advise you on which treatment paths to consider. Your doctor will likely choose molecular profiling:
- If typical standard treatments have failed
- If there has been a recurrence (return) of your cancer
- If your doctor is choosing from among several recommended treatments
- If your cancer is particularly aggressive or rare, or if few treatment options are available for other reasons

biomarkers

- Predictive markers- chance of response
- Prognostic markers- patient and outcomes as far as survival
- ER
- PR
- EGFR
- Her-2
- BRAF
- ALK
- ROS

Response Evaluation Criteria In Solid Tumors

- A standard way to measure how well a cancer patient responds to treatment. It is based on whether tumors shrink, stay the same, or get bigger. To use RECIST, there must be at least one tumor that can be measured on x-rays, CT scans, or MRI scans. The types of response a patient can have are a complete response (CR), a partial response (PR), progressive disease (PD), and stable disease (SD). Also called

Evaluation of target lesions

- *Complete response (CR)*: Disappearance of all target lesions
- *Partial response (PR)*: At least a 30% decrease in the sum of the LD of target lesions, taking as reference the baseline sum LD
- *Stable disease (SD)*: Neither sufficient shrinkage to qualify for PR nor sufficient increase to qualify for PD, taking as reference the smallest sum LD since the treatment started
- *Progressive disease (PD)*: At least a 20% increase in the sum of the LD of target lesions, taking as reference the smallest sum LD recorded since the treatment started or the appearance of one or more new lesions

Immune recist

- **Measurement of tumour burden**. In the irRC, tumour burden is measured by combining 'index' lesions with new lesions. Ordinarily tumour burden would be measured simply with a limited number of 'index' lesions (that is, the largest identifiable lesions) at baseline, with new lesions identified at subsequent timepoints counting as 'Progressive Disease'. In the irRC, by contrast, new lesions are simply a change in tumour burden. The irRC retained the bidirectional measurement of lesions that had originally been laid down in the WHO Criteria.

Immune response

Complete Response (irCR) is the disappearance of all lesions, measured or unmeasured, and no new lesions

Partial Response (irPR) is a 50% drop in tumour burden from baseline as defined by the irRC; and immune-related

Progressive Disease (irPD) is a 25% increase in tumour burden from the lowest level recorded.

Everything else is considered immune-related Stable Disease (irSD). The thinking here is that even if tumour burden is rising, the immune system is likely to 'kick in' some months after first dosing and lead to an eventual decline in tumour burden for many patients. The 25% threshold allows this apparent delay to be accounted for.