Understanding Your Pathology Report: Melanoma

What is a pathology report?

A pathologist is a doctor who diagnoses diseases by looking at tissue from the body. Samples of your melanoma tissue, removed during surgery or biopsy, will be sent to a pathologist to look at under a microscope. The pathology report goes over what the pathologist finds. This report has important information about your tumor. This is used to help guide treatment decisions for you. You should ask for a copy of this report to keep.

What is on a pathology report?

The report has these parts:

- Information about you and your health history.
- Diagnosis if it is known.
- What the specimen looks like to the naked eye (called gross description).
- What was seen under the microscope (microscopic description).
- Where the tissue was taken from.
- Diagnosis of the biopsy.

The report will give the type of melanoma and some information about it that is needed for prognosis (prediction of the course of the disease) and treatment. Some things you may find in your report are:

Type of Melanoma

Also called the histologic type or cellular type of melanoma. There are four major subtypes, and a few rare subtypes:

- **Superficial Spreading Melanoma:** Most common of the melanomas.
- **Nodular Melanoma:** These melanomas have a vertical growth phase (VGP). VGP means that the melanoma grows vertically, or deeper into the tissue (see below). Most often on the chest, back, head, or neck.
- **Acral Lentiginous:** Most common type in dark skinned and Asian populations. Most often happens on the soles of the feet, palms of hands, or under nails.
- **Lentigo Maligna Melanoma:** Often happens on sun-exposed areas in older people like the face or neck.
- **Rare subtypes:** Mucosal melanoma, desmoplastic melanoma, nevoid melanoma

Breslow Depth: The Breslow's depth of invasion measures the thickness of a melanoma, at its thickest point, in millimeters. This is important for prognosis. For example, a thicker melanoma has a poorer prognosis. Breslow thickness is more important than the tumor's Clark's Level (more below) in figuring out the prognosis.

Breslow Depth Classification:

- Melanoma in situ or thin invasive tumors: Less than 1.0mm (millimeter) in depth.

- Intermediate risk melanoma: 1mm - 4mm in thickness.
- High risk (thick) melanoma: More than 4.0mm in depth.

Clark's Level: Clark's Level (also called anatomic level) measures the depth of the melanoma. It tells you what layer of the skin the melanoma has grown into, and does not give a measurement in millimeters. The higher the Clark's Level number, the deeper into the tissue it has grown. Depending on where on the body the melanoma is, the depth of the Clark level can vary. One person's Clark's Level I may be 1mm while another person's is 2mm because it is in an area with more subcutaneous (fat) tissue. Some pathology reports may include Clark's level, but others will not. This number should not be mistaken for the stage. The breakdown of Clark's Level is as follows:

- **Clark's Level I**: Lesion involves the dermis.
- **Clark's Level II**: Lesion involves the papillary dermis.
- **Clark's Level III**: Lesion invades and fills the papillary dermis.
- **Clark's Level IV**: Lesion invades reticular dermis.
- **Clark's Level V**: Lesion invades subcutaneous tissue.

Radial Growth Phase (RGP): The melanoma lesion has RGP present or absent. If present, RGP means that the melanoma is growing horizontally within a single layer of skin. This means it is growing outward (horizontally), across the skin. Often, RGP melanomas are thin and often can be cured with surgery.

Vertical Growth Phase (VGP): The melanoma is described as having VGP present or absent. If present, it means that the melanoma is growing vertically or deeper into the tissues. VGP melanomas are invasive and may metastasize (spread to other areas).

Tumor-Infiltrating Lymphocytes (TILs): TILs look at your immune response to the melanoma. When the pathologist looks at the melanoma under the microscope, they look for the number of lymphocytes (white blood cells) within the lesion. This response, or TILs, is often described as "brisk," "non-brisk," or "absent,". It can also be called "mild" or "moderate." TILs show if the immune system can pick out and respond to abnormal melanoma cells.

Ulceration: Ulceration happens when the skin sloughs (peels away). This can sometimes happen in the center of a melanoma lesion. If there is ulceration, it goes into the staging of a melanoma. Ulceration is thought to show rapid tumor growth, which leads to the death of cells in the center of the melanoma.

Regression: Regression is either present or absent. Regression is an area where there had been melanoma cells that were killed by the immune system and replaced with inflammation or scar tissue. When there is regression, the total size of the melanoma is hard to see because it isn't known how extensive it was before the regression happened.

Mitotic Rate: This term says how fast the cells grow within the melanoma. Higher mitotic rates are linked with more rapidly dividing cells and larger lesions, with a greater chance of metastasis. Mitotic rate is thought to be the second most important factor (behind Breslow thickness) in figuring out prognosis. This value is used to stage very thin melanomas (<1mm).

To measure the mitotic rate, the pathologist finds the area of the tumor sample with the most mitoses (known as the hot spot) and counts the number of mitoses in a square millimeter near this area. It is reported as a value per mm2 or may be given as a range (like 1-4/mm2).

Satellites: Satellite lesions (also called micro satellites) are areas of melanoma that are more than 0.05 mm, but less than 2cm (centimeters) from the main (primary) lesion. Satellites are either present or absent. These are also shown in the staging.

In-Transit Metastases: These are like satellite lesions, but these areas are more than 2cm from the main lesion without being beyond local lymph drainage (called the lymph node basin). These are also shown in the

staging.

Blood Vessel/Lymphatic Invasion: Blood vessel or angio invasion as well as lymphatic invasion is either present or absent. If present, it means that the melanoma cells have spread into the blood or lymph system.

Margins: The report will describe the location of the tumor to the margins, or edges of the biopsy or tissue sample.

- "Negative margins" mean a small area of normal tissue around the whole tumor was also removed and is free of cancer cells—this makes sure that all of the melanoma is removed.
- "Positive margins," means that melanoma goes all the way to the edge of the tissue that has been removed, and that some melanoma may have been left in the body. The report may also state how close the tumor cells were to the margins (edges) of the sample. Positive or close margins may call for more surgery to get clean or negative margins.

Lactate Dehydrogenase (LDH): A blood test for the LDH enzyme that is often found in the body in low levels. A high LDH can mean metastasis and is used in staging melanoma.

BRAF Mutation Analysis: BRAF is a protein kinase that works with your genes to help cells replicate and survive. About half of melanomas have an abnormal form of BRAF (also called a mutation). This seems to cause overgrowth of these cancer cells and is the target of many new medications (called BRAF Inhibitor therapies). Testing for a BRAF mutation is often done in patients with advanced or aggressive melanoma to see if these BRAF Inhibitor therapies are a treatment option.

Types of Biopsies (may be listed under the procedure section):

- **Shave Biopsy**: A superficial area of the lesion is taken off, often with a razor-type blade.
- **Punch Biopsy**: A circular area of skin is removed with an instrument known as a punch, which comes in a few sizes- sort of like a tiny round cookie cutter.
- **Incisional Biopsy:** Part of the affected tissue is removed using a knife.
- **Excisional Biopsy**: The whole affected area and some healthy tissue is removed using a knife.

Staging: Staging helps group cancers based on the size and extent of the tumor and helps guide your treatment. Different staging systems are used for each type of cancer. The staging system most often used for melanoma is the American Joint Committee on Cancer (AJCC) staging system. The system assigns a TNM rating based on the extent of the primary tumor, if there is cancer in the lymph nodes, and if there is metastasis. See the article Melanoma Skin Cancer: Staging and Treatment for all of the staging information.

Putting it all together

Some pieces of the report are used to find the stage of your cancer. Other parts of the report help decide what treatment would work best. By understanding the basics of the report, you will be better able to talk about your treatment options with your healthcare team. Your provider will be able to answer any questions you have about your report.