

Staging and Prognosis

Once a Diagnosis of Anal Cancer is Made, What Needs to be Done?

Invasive anal cancer is curable in a great number of patients, particularly when it is diagnosed early and tumors are small. Anal cancers are most commonly treated with a combination of chemotherapy and radiation, which is discussed in further detail in the treatment section but can be expected to cause the tumors to completely regress in 80 to 90% of patients. Once a diagnosis of cancer is made from any site, one of the first steps done prior to determining how the cancer should be treated is to determine whether it is localized or has spread or metastasized ^[1] either to nearby lymph nodes or to distant organs, a process known as staging a cancer. The American Joint Committee on Cancer has created a formal staging system for most cancers that is based on 3 criteria: T or tumor size and an assessment of invasion of nearby organs, N or whether or not the cancer has spread to local lymph nodes, and M, which denotes the absence or presence of metastases to distant organs. The stage of a cancer is based on determining the T, N, and M for each tumor, which is then used to guide treatment and also provide an idea of the probability that the cancer can be cured or how effective the treatment is likely to be.

Staging the Cancer



The size of the tumor is usually measured by DARE. Typically following a diagnosis, patients will have CAT scans of the chest, abdomen, and pelvis to stage their cancer. A CAT scan is a common x-ray procedure that in comparison to common x-rays of bones provides images of the internal organs and other structures such as blood vessels and lymph nodes. Prior to imaging, patients usually drink a barium-like solution to outline the contents of the gastrointestinal tract, barium is also inserted through a tube in the rectum, and contrast dye is injected intravenously to distinguish the vascular structures. This test is commonly done to assess the inguinal and pelvic lymph nodes and presence or absence of distant metastases in the liver and lungs. In some cases, an MRI of the pelvis is done, which is a different type of

imaging that uses a large magnetic coil and may be helpful in detecting spread to nearby organs.

Another test that is becoming more commonly used to stage anal cancers is an endoanal ultrasound. This is a probe approximately the size of an anoscope that can be inserted into the anus and rectum and uses sound waves like SONAR to generate images. It is very sensitive at detecting perirectal lymph nodes and involvement of neighboring organs. Ultrasound also provides a good estimation of the depth of invasion of the tumor, whether it is limited to the submucosa (tissue immediately beneath the lining of the anus) or penetrates the sphincter muscle. A modified staging system based on ultrasound findings has been proposed: a uT1 tumor is confined to the submucosa, a uTa lesion only invades the internal anal sphincter, a uTb lesion invades the external sphincter, a uT3 invades through the sphincter muscles into the perianal tissue, and a uT4 tumor invades neighboring structures.

Tumors are classified according to the size and characteristics of the primary tumor(T), whether the cancer has spread to regional lymph nodes (N), and whether the cancer has metastasized, or spread, to distant areas of the body (M). Staging is from 0-4. So a T3 tumor (stage 3) is larger than a T1 (stage 1). An N0 means the cancer hasn't spread locally, while an N3 means it is in many of the surrounding lymph nodes. M0 means the cancer has not spread, and M1 means cancer can be found in other areas of the body.

Significance of Stages of Cancer

Earlier stage cancers such as stage I and II are more likely to be cured than more advanced stages with larger tumors and cancers that have spread to local lymph nodes. With the use of radiation and chemotherapy, known as combined modality therapy (CMT), even some patients with spread to the lymph nodes will have good results. Using combined modality therapy, the anal sphincter can be preserved in a majority of patients with acceptable side effects and toxicity and very low treatment-related deaths. Recognized adverse prognostic factors include tumors located in the anal canal as opposed to anal margin or perianal skin cancers, locally advanced tumors including tumors greater than 5 cm (T3), tumors of any size that invade adjacent organ such as the vagina, urethra, or bladder (T4), lymph node involvement, and probably being HIV-positive, particularly for patients with CD4 lymphocyte counts under 200.

The goal of CMT is to eradicate the tumor and still preserve the anus. Many patients achieve good results and don't require a colostomy (a surgical procedure in which the large intestine is brought out through a hole in the lower abdomen known as a stoma and covered with a plastic bag). The effectiveness of treatment is often evaluated by a term known as colostomy-free survival, which means the percentage of patients treated with CMT who never required a colostomy. Overall survival is another way of evaluating the effectiveness and refers to the percentage of patients treated who survived the treatment and did not die for other reasons, such as advanced HIV infection or an automobile accident or heart attack for example. Sometimes this is reported as the percentage of people treated who are alive 5 years after treatment, which is known as 5-year survival.

Up to 90% of patients present with local disease without distant metastases [1]. In cases where the therapy is not completely effective, the cancer may return or grow back in the original site, which is known as a local recurrence and the percentage of patients treated who recur locally is known as the local failure rate. Most local recurrences tend to occur within the first 2 years after completing therapy. When local recurrences occur after CMT, then an operation known

as an abdominoperineal resection (APR) with placement of a permanent colostomy is performed and approximately 50% of patients will be cured with this additional operation.

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