

Sister Mary Joseph Nodule (Umbilical Skin Metastasis)

The term "Sister Mary Joseph nodule" (SMJ nodule) is named after Sister Mary Joseph Dempsey, an Irish Catholic nurse who made significant contributions to the recognition of advanced intra-abdominal malignancy. While serving as a surgical assistant at Saint Mary's Hospital in Rochester, Minnesota, Sister Mary Joseph observed that the presence of a periumbilical swelling often signified advanced cancer, frequently indicating poor prognosis. Her observations led to the identification of the nodule that now bears her name.

Definition

A Sister Mary Joseph nodule is a palpable nodule that protrudes from the umbilicus and is commonly associated with advanced, metastatic intra-abdominal malignancy. The nodule, often detected by palpation, represents cutaneous metastasis, typically from gastrointestinal or genitourinary cancers, and suggests that the malignancy has spread to the abdominal peritoneum. Although it is not commonly seen in early-stage cancers, its presence is a significant indicator of advanced disease with poor prognosis.

Etiology and Causes

The SMJ nodule is most frequently associated with malignancies originating from the following systems:

- Gastrointestinal Cancer:
 - Stomach cancer (gastric adenocarcinoma)
 - Colon cancer
 - Pancreatic cancer
- Genitourinary Cancer:
 - Ovarian cancer

These primary cancers often spread to the umbilical region via peritoneal dissemination, where tumor cells penetrate the peritoneum and reach the umbilical skin through direct transperitoneal spread, lymphatic routes, or the hematogenous pathway.

In rarer cases, the spread can occur via developmental remnants such as the falciform ligament, median umbilical ligament, or umbilical duct, which are normally regressed structures that may provide a pathway for metastasis.

Clinical Presentation

The presentation of an SMJ nodule is typically characterized by the following:

- Firm, indurated nodule: The nodule is typically red and vascular, often tender and may become fissured or ulcerated with secondary mucinous, purulent, or even bloody discharge.
- Accompanying systemic symptoms may include:
 - Epigastric pain
 - Abdominal distension
 - Unexplained weight loss
 - Nausea
 - Ascites
 - Rectal bleeding, in cases of colorectal metastasis

Patients with an SMJ nodule may also exhibit signs of widespread metastatic disease, with systemic involvement beyond the umbilical region.

Proposed Mechanisms of Spread

The metastatic spread of cancer to the umbilical region is typically understood through the following mechanisms:

- **Direct Transperitoneal Spread:** Malignant cells from intra-abdominal tumors may disseminate via the peritoneal cavity. Tumor cells can reach the umbilicus through lymphatic channels, especially along the path of the obliterated umbilical vein.
- **Hematogenous Spread:** In some cases, cancer cells may enter the bloodstream, spreading the malignancy to distant organs and tissues, including the umbilical skin.
- **Developmental Remnants:** The presence of developmental structures like the falciform ligament or the median umbilical ligament, which are remnants of fetal circulation, may offer a route for cancer metastasis.

Diagnosis and Evaluation

The diagnosis of an SMJ nodule is typically clinical, but a skin biopsy is crucial for confirmation. Histopathological examination of the nodule can determine whether the lesion is metastatic and help identify the primary malignancy. Further imaging studies, such as CT scans and ultrasound, may be required to evaluate the extent of intra-abdominal disease and detect any other areas of metastasis.

Management and Treatment

Management of the SMJ nodule primarily involves palliative care due to the advanced nature of the disease:

- **Palliative Care:** Given the high likelihood of widespread metastasis, treatment focuses on symptomatic relief, including pain management and addressing other distressing symptoms such as ascites or gastrointestinal obstruction.
- **Surgical Intervention:** In most cases, wide excision or surgery to remove the nodule is not effective in altering the overall prognosis or halting disease progression. Surgical resection may be considered for symptom relief or for cosmetic reasons but is unlikely to provide long-term benefit.
- **Radiotherapy:** Similarly, radiotherapy is generally not curative but may be employed for local symptom control or to reduce tumor bulk in the umbilical region.
- **Chemotherapy and Targeted Therapy:** Treatment of the underlying malignancy, such as chemotherapy, may be initiated depending on the type of cancer and its sensitivity to systemic treatment.

Despite these options, the prognosis remains poor, as the presence of an SMJ nodule often signals widespread metastatic disease, making it an important predictor of short-term survival.

Prognosis

The prognosis for patients with an SMJ nodule is generally poor. The presence of this nodule often indicates advanced metastatic disease, with involvement of the peritoneum and possibly other distant organs. Life expectancy is limited, with most patients surviving less than one year following the discovery of the nodule. The overall survival rate is typically low, and therapeutic interventions aim to improve quality of life rather than cure the disease.

Conclusion

The Sister Mary Joseph nodule is a clinical sign that serves as an indicator of advanced metastatic intra-abdominal malignancy. It most commonly arises from gastrointestinal or genitourinary cancers and often signals poor prognosis. Diagnosis is confirmed through biopsy, and while management focuses on palliative care, the prognosis remains generally poor due to the widespread nature of the underlying disease.

References

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