**Importance of Time-saving Fine-needle Aspiration Cytology Procedure in the Diagnosis of Sister Mary Joseph’s Nodule in the Era of Advanced Technology**

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**Abstract**

The umbilicus is an uncommon site of cutaneous metastasis called as Sister Mary Joseph’s nodule (SMJN), which is associated with grave prognosis. The most common primaries are the colon and stomach in males and ovaries and endometrium in females. We present a case of an elderly male with indurated umbilical swelling, unguided fine-needle aspiration cytology (FNAC) of which revealed umbilical metastasis (SMJN). On subsequent extensive work-up, this case was diagnosed as primary gastric adenocarcinoma on relevant gastric biopsy. This highlights the cost-effectiveness, time-saving diagnosis with the usage of FNAC procedure in such umbilical nodule cases, which are later confirmed on histopathology.

**Keywords:** Fine-needle aspiration cytology, Sister Mary Joseph’s nodule, umbilicus

**INTRODUCTION**

Any umbilical growth must be faced with suspicious of metastasis and managed with thorough workup of patient to exclude intra-abdominal malignancy.[1]

Fine-needle aspiration cytology (FNAC) is one such simple, time-saving outpatient department procedure to diagnose Sister Mary Joseph’s nodule (SMJN). This is described as a nodule (<5 cm diameter) which is firm, indurated, often with vascular appearance. It may be ulcerated, fissured with bloody, mucoid, serous, or purulent discharge.[1]

**CASE REPORT**

A 68-year-old thin gentleman, of 45 kg body weight, had presented with painless, indurated umbilical swelling of 20 days duration. There was no discharge from this swelling. He also complained of anorexia, weight loss, and constipation for 10 days. No history of nausea, vomiting, and hematemesis/melena. No past history of hypertension/tuberculosis. His family history was irrelevant. He had a history of right inguinal hernia repair in mid-2015. Patient was chronic tobacco/pan-chewer and chronic alcoholic. He had no history of acid peptic ulcer disease.

On examination, there was small umbilical nodule of 1 cm × 1 cm size, oval, confined to skin, and sparing the underlying muscle. It had slight reddish hue, smooth surface, and on palpation, it was firm to hard, nontender, nonpulsatile, and nonfluctuant. It had pinchable overlying skin and fixed to underlying soft tissue [Figure 1]. The surrounding skin was normal. Per-abdominal examination revealed tenderness over epigastric/umbilical region.

His complete blood cell, liver function test, chest X-ray, AND urine examination were within normal limits (WNLs). Serum creatinine and random sugar levels were WNL. Ultrasound Sonography-abdomen was suggestive of acute appendicitis. He was subjected to FNAC of this umbilical nodule [Figure 2]. FNAC revealed metastasis of epithelial malignancy adenocarcinoma (SMJN) and was advised to rule on histopathology.

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out gastric malignancy through work-up based on patient’s complaints.

Upper gastrointestinal endoscopy report revealed proliferative lesion, edematous mucosa with ulceration occupying anterior stomach wall, and lesser curvature of distal gastric body. Computed tomography abdomen report was suggestive of gastroduodenal tumor, moderate ascites, and perigastric omental nodules. Gastroduodenoscopy report revealed tumor along lesser curvature extending to and deforming the pylorus and duodenum. Thus, provisional diagnosis was gastric malignancy with SMJN.

Umbilical nodule biopsy confirmed the diagnosis of metastatic adenocarcinoma [Figure 3]. Gastroscopic biopsy of tumor at lesser curvature/distal gastric body revealed adenocarcinoma (diffusely infiltrating type). Finally, the patient was subjected to gastrectomy, local lymph node/umbilical, and omental nodules’ resection after neoadjuvant chemotherapy, and the above biopsy diagnosis was confirmed on the larger specimen [Figure 4].

Currently, the patient is under regular follow-up and advised chemotherapy cycles.

**Discussion**

Sir Hamilton Bailey coined the word “SMJN” for the umbilical metastasis of an abdominal malignancy in 1948.[2] The mean age of SMJN diagnosis is approximately 50 years, with a range of 18–87 years.[3] Our patient was a 68-year-old male.

Among all malignant umbilical lesions, about 12% are primary tumors, whereas 88% are metastatic (SMJN).[2] SMJN is reported as the first presentation of primary malignancy in 15%–30% of cases.[2] SMJN has a poor prognosis, with average survival of 6 months after onset of umbilical metastasis.[4]

SMJN can be categorized as metastasis from GI malignancies (35%–65%), genitourinary tract (12%–35%), unknown tumor sites (15%–30%), and those from lung and breast (3%–6%).[3] Among GI tract malignancies, common
sites in decreasing order of frequency are stomach (25%), colorectal (10%), and pancreas (7%). Among the prominent histological type is adenocarcinoma (75%), with 15% comprised of other tumor types such as squamous cell carcinoma, undifferentiated tumors, sarcoma, carcinoïd, mesothelioma, lymphoma, and melanoma.[1,3,5,6]

An umbilical tumor is benign (57%) or malignant (43%). SMJN has to be differentiated from benign umbilical lesions which include umbilical hernia, umbilical endometriosis, pilonidal sinus, hypertrophic scar, pyogenic granuloma, lymphangioma, omphalitis, fibroma, foreign body granuloma, mycosis, papillomas, keloids, myxoma, nevi (most common benign tumor), epithelial inclusion cysts, urachal duct sinus, and dermatofibroma.[1,3]

Apart from malignant melanoma, which is the most common primary umbilical malignancy, other primary malignancies include basal cell carcinoma, squamous cell carcinoma, adenocarcinoma, and sarcoma. Furthermore, mycosis fungoides (non-Hodgkin’s lymphoma) requires special mention as a differential to SMJN. It is a primary T-cell lymphoma involving skin. However, rather than umbilicus epidermis, the subepithelial tissue was showing the primary tumor in our case. Primary umbilical adenocarcinoma is assumed to arise from ectopic remnants of urachus.[5,5-7]

Tumor may spread to the umbilicus through lymph ducts, blood vessels, contiguous extension, and embryologic remnants. This may be the first clinical manifestation of occult visceral cancer, or it indicates tumor recurrence.[8-10]

FNAC is a cost-effective, simple procedure to diagnose SMJN just like in our case. It must be followed by extensive workup for the diagnosis of the primary tumor.[5] In our case, we diagnosed it as SMJN on 1st day of admission and advised to rule out primary gastric malignancy, based on clinical correlation.

Biopsy (gold standard test) of SMJN revealed the diagnosis of adenocarcinoma metastasis, whereas guided biopsy of gastric lesions revealed primary gastric adenocarcinoma after 4 days of patient’s admission.

The average time between diagnosis of SMJN/skin manifestation and primary cancer is 3 months. The mean life expectancy without any treatment is 2–11 months. Fewer than 15% of such patients live beyond 2 years. Survival of such cases is better when a combination of neoadjuvant chemotherapy; surgery is otherwise. We suggest the simple, time-saving, initial FNAC procedure as mandatory to establish SMJNs diagnosis and to guide the search for primary malignancy on workup of patient. Subsequent guided biopsy from the primary tumor will help to give a definitive diagnosis. Treatment (surgery with chemotherapy) gives better results of survival. Regular follow-up is important after surgery.

Conclusion

We infer that identification of SMJN is still an important clinical sign even in this era of modern technology. High degree of clinical suspicious is required to diagnose it, as most umbilical nodules are metastatic, unless proven otherwise. We suggest the simple, time-saving, initial FNAC procedure as mandatory to establish SMJNs diagnosis and to guide the search for primary malignancy on workup of patient. Subsequent guided biopsy from the primary tumor will help to give a definitive diagnosis. Treatment (surgery with chemotherapy) gives better results of survival. Regular follow-up is important after surgery.

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Conflicts of interest

There are no conflicts of interest.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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