Unusual Presentation Of A Rare Tumor: Umbilical Metastasis (Sister Mary Joseph's Nodule) Of Malignant Peritoneal Mesothelioma

A Malani, C Gupta, L Kapadia

Citation

A Malani, C Gupta, L Kapadia. *Unusual Presentation Of A Rare Tumor: Umbilical Metastasis (Sister Mary Joseph's Nodule) Of Malignant Peritoneal Mesothelioma*. The Internet Journal of Family Practice. 2004 Volume 4 Number 1.

Abstract

Malignant neoplasms are unlikely to be considered in the clinical differential diagnosis of incidental umbilical nodules in patients presenting for unrelated reasons and may even be missed unless a through examination is performed. We present a case of a patient who presented with complaints of body aches following a fall, and was found to have an umbilical nodule with metastatic malignant mesothelioma. A literature review revealed only rare cases of patients presenting for unrelated complaints, and who were found to have umbilical metastasis of malignant mesothelioma. We conclude that umbilical metastasis (Sister Mary Joseph's nodule) from malignant peritoneal mesothelioma is rare, especially as an initial finding. Clinicians should include it in their list of differential diagnosis in patients presenting with umbilical nodules even in the absence of history of asbestos exposure.

BACKGROUND

Malignant peritoneal mesothelioma (MPM) is a rare disease with an overall incidence of only 1-2 cases per million.[1] One third to one fifth of all mesotheliomas are peritoneal.[1] Umbilical metastasis from MPM is rare and only a few cases are described in the literature. This neoplasm has a very poor prognosis with a high mortality rate and recognition of this unusual presentation is important, especially in patients presenting with unrelated complaints.[2] In an effort to emphasize this important clinical differential, we present a report of a patient who presented with unrelated complaints and was found to have an umbilical nodule. Further investigations revealed it to be an umbilical metastasis of a malignant peritoneal mesothelioma. A brief review of the literature is also presented.

CASE REPORT

A 66-year-old Armenian woman who has been living in United States for the past year, presented to her clinician with complaints of pain following a fall that she had sustained a few days earlier. She had been having persistent vomiting and abdominal pain of 4 days duration. The vomiting had started suddenly in the night and was not related with anything in particular. She also had a vague abdominal pain that she said was centered about the center of her abdomen. Because of the persistent vomiting she had felt weak and sustained a fall. Her chief complaint was that of generalized body aches that were likely due to her fall the previous day.

She was a non-smoker and denied alcohol consumption, except occasionally. She had worked as a secretary in a law firm in her native country for around 30 years and was now retired and living with her son who had immigrated to the United States. Her family history was significant for breast cancer in her sister. She had had a recent mammogram that had been negative. She did not remember if she had Papanicolaou smears performed but did say that she had visited her gynecologist in Armenia a few years back and her tests had been all normal.

Physical examination revealed a frail woman without significant distress. Relevant positive findings on physical examination included multiple enlarged right axillary lymph nodes that were hard to touch. A distended abdomen was noted and percussion confirmed ascites. A 4 cm, hard umbilical nodule was also noted.

Laboratory investigations were significant for serum albumin of 2.6 gm /L and serum CA125 level of 190.24 U/ml (normal - <35 U/ml.). Serum CEA and alpha-fetoprotein levels were within the normal range. A chest

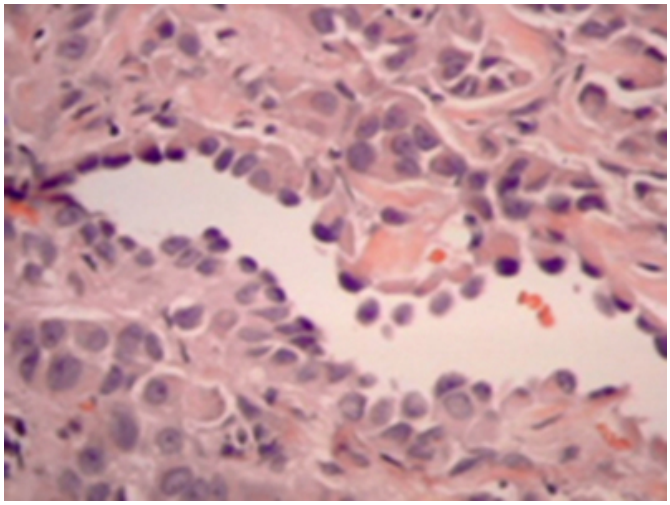
radiograph revealed a calcified mass in the right axilla. The lungs were clear. She then underwent computed tomography (CAT) scanning of the abdomen and chest that revealed diffuse peritoneal implants, ascites, and multiple small bilateral lower lung nodules. Bilateral mammograms of the breasts were normal. The adenexal organs were unremarkable and the uterus was of a normal size. No renal masses were identified on the scans. The working differential included primary lung cancer with widespread metastasis and metastatic disease from unknown primary site.

Paracentesis of abdomen was performed. The ascetic fluid was hemorrhagic with red blood cells reported at 50,000/ mm^3 and white blood cells at 1900/ mm^3. The differential count was: polymorphs, 1%, and lymphocytes, 95%. The albumin level was 2.0 gm/dl, LDH 413 U/L (serum LDH was 224 U/L, normal range: 60-250 U/L), glucose 86 mg/dl (Blood glucose was 137 mg/dl), protein of 3.6 gm/dl. Cytological analysis of the fluid was reported as a metastatic adenocarcinoma with possible primaries including the lung.

She then underwent a biopsy of the umbilical nodule. Gross examination revealed skin of umbilicus with a 4.0 cm hard nodular area, which was grayish-white in appearance. Microscopically, solid nests and single, large and pleomorphic cells were seen infiltrating within a fibrous background. The cells had a moderate amount of amphophilic cytoplasm and large vesicular nuclei with prominent nucleoli. Other areas revealed more normal mesothelium lined by cuboidal cells with small round to oval nuclei and abundant cytoplasm (Figure 1).

Figure 1

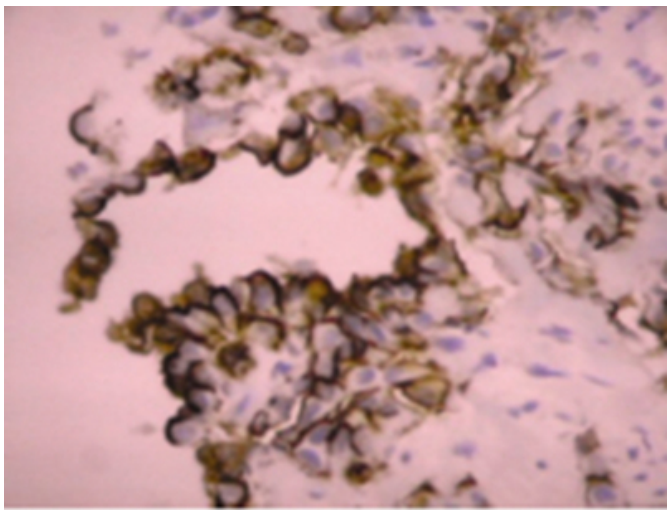
Figure 1: Representative section of the umbilical nodule contained infiltrating nests of pleomorphic cells with large nuclei containing prominent nucleoli, surrounding more normal mesothelium in the center of the field. The cells have modest amount of cytoplasm and high nucleocytoplasmic ratios. (H&E stain, 400X)



Immunohistochemical analysis revealed that the cells were positive for CAM5.2, calretinin, and HBME-1 (Figure 2), and negative for TTF-1, EMA, CEA, B72.3, and Leu-M1 (CD15). These results confirmed the tumor to be a malignant mesothelioma. The patient would have received chemotherapy in an effort to reduce the tumor burden. Unfortunately, she developed sepsis and multiple organ failure during her hospital stay and died 4 days later.

Figure 2

Figure 2: The tumor cells are immunoreactive with HBME-1 antibody, supporting a diagnosis of malignant mesothelioma.



DISCUSSION

Umbilical metastasis from internal malignancies has been given the eponym “Sister Mary Joseph's nodule” in recognition of Sister Mary Joseph, first assistant of Dr. William J. Mayo a surgeon at St. Mary's hospital at Rochester, Minnesota (presently the Mayo Clinic). She predicted malignancy by feeling the umbilicus of patients scheduled for laparotomies.[3] An umbilical nodule might represent the first clinical presentation of disseminated malignancy or an indicator of recurrence in a patient with known primary. The common primary sites reported include the stomach, colon, ovary and pancreas.[2] Metastatic lesions can involve the umbilicus by several routes, including contiguous extension from the peritoneal surface, through dermal lymphatics, through venous communication, and through ligaments of embryonic origin such as the round ligament of the liver and the median umbilical ligament from the urachus.[2] The presence of umbilical nodules in patients with internal malignancies is believed to be associated with poor prognosis[2].

Umbilical metastasis from malignant peritoneal mesothelioma is very uncommon.[4, 5] Boyd et al reviewed post mortem reports over a 24 year period from the Office of the United Kingdom's Health and Safety Executive Register, and identified only 3 cases of MPM that had presented with unrelated symptoms or with symptoms attributable to an umbilical nodule.[6] Two of these three patients did not have any asbestos exposure. This finding is identical to that of our present patient. Thus, a MPM should not be excluded on the basis of absence of a history of asbestos exposure.

Clinical awareness that a MPM can present as an umbilical nodule is important, as it has management and prognostic implications. Once an umbilical nodule is recognized as due to internal malignancy, the diagnostic challenge is to differentiate MPM from other adenocarcinomas, particularly from serous papillary carcinoma of the peritoneum and ovary. Frozen section, cytology and routine histology can often be misleading if a diagnosis of MPM is not actively considered in the differential diagnosis. Serous papillary carcinomas of the peritoneum or from the ovary or endometrium are composed of true papillae with fibrovascular cores and complex architecture. They are lined by cuboidal to columnar cells with a high degree of cytologic atypia. The nuclei are enlarged, hyperchromatic, contain frequent mitosis and the nucleocytoplasmic ratios are high. Calcific concretions (psammoma bodies) are seen in approximately 30% of these tumors. MPM has a tubular or papillary architecture, the latter having true fibrovascular cores that may contain psammoma bodies. These may alternate with areas with spindle cells. The individual cells are atypical but relative more uniform that those of a serous papillary carcinoma. Although, a strong positive diastase resistant PAS reaction in a peritoneal malignancy rules out a mesothelioma, it is often difficult to interpret. Immunohistochemistry can be the key to correct diagnosis. Mesotheliomas are immnuhistochemically positive for cytoplasmic cytokeratins including CAM 5.2 and calretinin, and membrane related proteins including HBME–1(an antimesothelial antibody). They are typically negative for carcioembryonic antigen (CEA), LEU-M1 (CD15), HMFG-2, BerEP4, and B72.3 (TAG-72).[7,8] Occasionally vimentin may be focally positive also but does not usually help with the differential diagnosis. HBME-1 has been reported to be especially useful in distinguishing malignant mesothelioma from an adenocarcinomas.[7,8]

CONCLUSIONS

Patients presenting with either unrelated symptoms or those related to an umbilical mass or nodule should be evaluated for underlying malignant process. Although, the usual primary site is the stomach, colon, ovary, and the pancreas, a metastasis from a malignant peritoneal mesothelioma should be considered even in the absence of a history of asbestos exposure.

CORRESPONDENCE TO

Chakshu Gupta, M.D. Heartland Regional Medical Center 5325 Faraon Street St. Joseph, MO 64506 Tel: (816) 271-6170 Fax: (816) 271-6673 Email: chakgupta@yahoo.com

References

1. Sugarbaker PH, Acherman YIZ, Gonzalez-Moreno S, Ortega-Perez G, Stuart OA, Marchettini P, Yoo D: Diagnosis and treatment of peritoneal mesothelioma: The Washington cancer institute experience. Semin Oncol 2002;29(1):51-60
2. Powell FC, Cooper AJ, Massa MC, Goellner JR, Su WPD. Sister Mary Joseph's nodule: A clinical and histologic study. J Am Acad Dermatol 1984; 10:610-15
3. Steensma DP. Sister (Mary) Joseph's nodule. Ann Intern Med. 2000 Aug 1;133(3):237
4. Kwee WS, Veldhnizi RW, Vermorkay JB, Golding Rb, Donner R: Peritoneal mesothelioma presenting as a umbilical tumour. Pathol Res Pract 1982 Jul; 174(1-2): 159-65
5. Chen KT. Malignant peritoneal mesothelioma presenting as Sister Joseph's nodule. Am J Dermatopathol. 1991 Jun; 13(3): 300-303

6. Boyde AM, Attanoos RL: Sister Mary Joseph's nodule in malignant peritoneal mesothelioma. Histopathology 2003 Sept;43(3):303-4.
7. Ordonez NG: Role of immunohistochemistry in distinguishing epithelial peritoneal mesothelioma from peritoneal and ovarian carcinomas. Am J Surg Path 1998; 22: 1203-14.
8. Bateman AC, Al-Talib RK, Newman T, William JH, Herbert A. Immunohistochemical phenotype of malignant mesothelioma: Predictive value of Ca125 and HBME 1 expression. Histopathology 1997;30:49-56.

Author Information

Ashok Malani, M.D.
St. Joseph Oncology

Chakshu Gupta, M.D.
Heartland Regional Medical Center

Lakshmi Kapadia, M.D.
Department of Pathology, Coney Island Hospital