UIJ UroToday International Journal®

www.urotodayinternationaljournal.com
Volume 4 - October 2011

Myeloid Sarcoma of the Bladder: Case Presentation and Review of the Literature

Eng Hong Goh,[1] Akhavan Adel,[1] Praveen Singam,[1] Christopher Chee Kong Ho,[1] Guan Hee Tan,[1] Badrulhisham Bahadzor,[1] Zulkifli Md Zainuddin,[1] Fauzah Abdul Ghani,[2] Noraidah Masir[2]

[1] Urology Unit, Department of Surgery, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malaysia
[2] Department of Pathology, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malaysia

Submitted April 12, 2011 - Accepted for Publication May 11, 2011

ABSTRACT

Myeloid sarcoma, an uncommon proliferative hematological entity associated with leukemia, can present in various extramedullary soft tissues in the body and its outcome is generally undesirable. Due to its rarity, the diagnosis can be challenging and commonly missed. A search through PubMed revealed only 8 cases in English literature. We would like to present a case of myeloid sarcoma in the bladder and briefly discuss this disease.

KEYWORDS: Myeloid sarcoma; Chloroma; Bladder

CORRESPONDENCE: Eng Hong Goh, Urology Unit, Department of Surgery, Universiti Kebangsaan Malaysia Medical Center, Jalan Yaacob Latif, Bandar Tun Razak, Kuala Lumpur 56000, Malaysia (Bobby.goh@hotmail.com).

CITATION: *UroToday Int J*. 2011 Oct;4(5):art 48. doi:10.3834/uij.1944-5784.2011.08.13

INTRODUCTION

Myeloid sarcoma (MS) is a type of hematological disease in which there is a localized deposition of immature myeloid cells in extramedullary sites such as intestine, skin, or orbit. It could present as a primary manifestation or secondary in cases whereby there is established proliferative hematological disorders such as acute myelogenous leukemia (AML), or myeloproliferative or myelodysplastic syndromes [1, 2, 3]. For the reason of rarity, making a diagnosis of MS is a challenge, especially in the absence of proliferative hematological disease. A search through PubMed in English literature revealed only 8 cases so far, and we would like to present our case and discuss briefly this rare but serious disease with grave outcomes.

CASE REPORT

A 72-year-old Chinese lady presented in July, 2009 with a one-week history of hematuria accompanied by suprapubic pain. Otherwise, she had no other urinary symptoms. This patient had a history of myelodysplastic syndrome in remission and received no treatment at current presentation. Cystoscopic examination showed a polypoidal growth at the base of the bladder and the bladder mucosa appeared carpeted with extensive erythematous lesions. The tumor was subsequently resected transurethrally. The surgery was complicated by difficult bleeding control but despite so, the tumor appeared completely resected at the end of surgery. Post-operatively, the patient redeveloped bouts of hematuria and cystoscopic hemostasis was performed thrice. The bleeding was finally controlled by aluminium solution irrigation. The histopathology result was reported as MS. A section from the bladder biopsy showed multiple fragments of tumor tissue composed of medium-sized, polygonal, malignant cells arranged in solid sheets. Some of the cells were seen surrounding the blood vessels. The malignant cells were large and pleomorphic with hyperchromatic nuclei and prominent nucleoli. A distinct cell border was noted and some of the malignant cells had moderate cytoplasm. No Reed-Sternberg cells were seen. Mitotic figures were abundant (more than 40 per 10

UroToday International Journal®

case report

Myeloid Sarcoma of the Bladder: Case Presentation and Review of the Literature

Figure 1. Large pleomorphic and hyperchromatic nuclei with prominent nucleoli and distinct cell border (hematoxylin and eosin, x 60).
doi: 10.3834/uij.1944-5784.2011.08.13f1

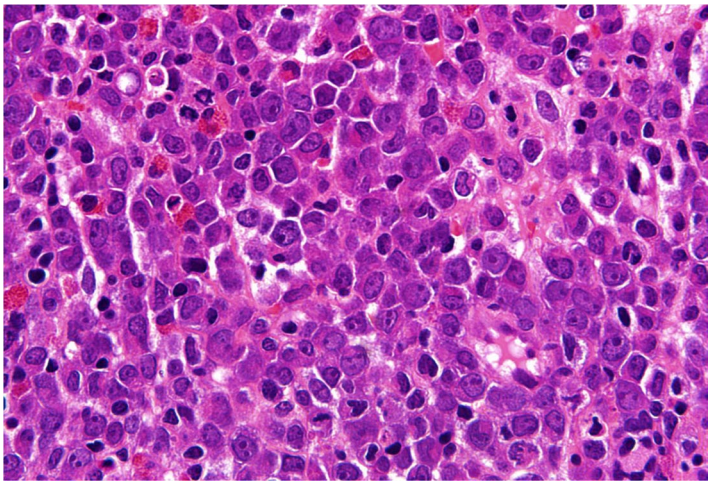
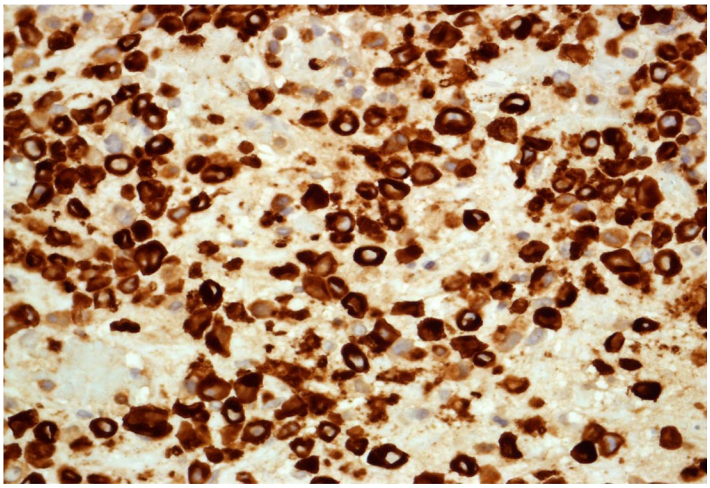
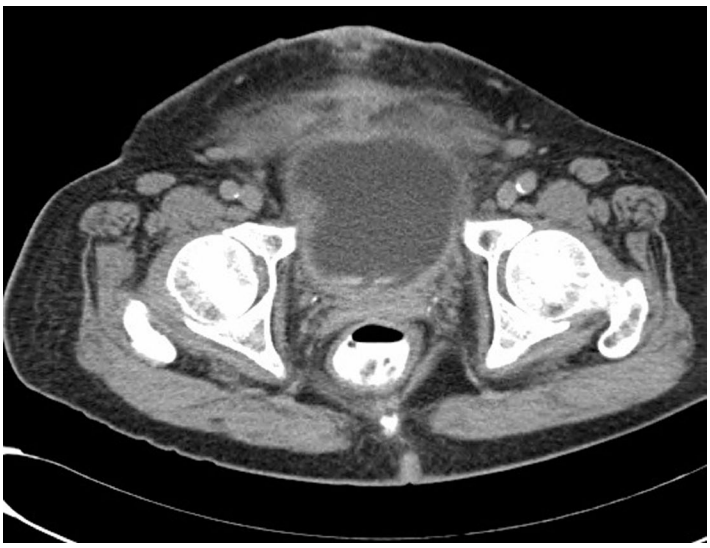


Figure 2. The malignant cells are diffusely positive for immunostaining by myeloperoxidase (MPO) (X60).
doi: 10.3834/uij.1944-5784.2011.08.13f2



high-power field) and areas of necrosis were present (Figure 1). Immunohistochemical stainings showed immunopositivity for leucocyte common antigen (LCA), myeloperoxidase (MPO), CD 99, and CD 117 (weak and scattered positivity) (Figure 2). The rest of the immunostainings were negative; Cytokeratin, CD 3, CD 79alpha, CD 20, PAX5, CD 5, Cyclin D1, CD 23, CD 10, CD 138, and CD 4. Ki67 showed a proliferation index of 80%.

Figure 3. The CT scan shows the residual tumor at the right lateral wall of the bladder.
doi: 10.3834/uij.1944-5784.2011.08.13f3



The cytogenetic assessments with karyotype demonstrated *47, XX + 8, 46, XX, 7q–* [9]. A workup CT scan of the thorax/abdomen/pelvis showed a residual tumor in the bladder and a bone scan revealed an absence of bony metastasis (Figure 3). A bone trephine biopsy confirmed the presence of acute myeloid leukemia (AML) and the patient was planned for palliative Ara-c regime. However, she later developed bouts of sepsis and lower-gastrointestinal-tract bleeding and these delayed the chemotherapy. The patient was subsequently lost to follow-up.

DISCUSSION

MS is the deposition of immature myeloid cells in the extramedullary sites [1]. Its occurrence in the bladder was described as extremely rare [4]. A few case series revealed that the common sites include the skin, lymph nodes, and central nervous system, and none of these papers reported bladder cases [3, 5, 6, 7]. It has been thought that the tumor originates in the bone marrow and subsequently migrates to other organs through Haversian canals [8]. The lesion could occur primarily in the absence of or occur later in an established proliferative hematological disorder such as AML or myelodysplastic syndrome. Disregard of this differentiation, MS basically predates the onset or presents as the manifestation of AML [2]. A case series by Breccia et al. [3] reported that 11 out of 12 MS patients developed AML after an average of 10.5 months of first evidence of disease and its incidence was 2% to 4.7% in

UroToday International Journal®

case report

Table 1. An expanded data originally produced by Al-Quran et al. on the reported cases of myeloid sarcoma of the bladder [11].

doi: 10.3834/uij.1944-5784.2011.08.13t1

Case no.	Source	Year	Age	Sex	Initial diagnosis	Symptoms	Tumor location and size	Cytogenetic studies	Treatment	Outcome
1	Liu et al.	1973	NR	NR	ML	NR	Bladder	NR	NR	NR
2	Chaitin et al.	1984	29	F	None	Dysuria, Haematuria	Trigone 80 x 70 x 60 mm	NR	Combination chemotherapy (Doxorobicin, Vincristine, Ara-C, Prednisone)	NED,13 month
3	Cartwright et al.	1991	16	M	AML-M2	Haematuria	Left ureteral orifice, 20 x 30 mm	NR	External radiotherapy	Death due to sepsis 2months after treatment
4	Bekassy et al.	1996	17	M	AML-M2	NR	NR	NR	Surgery, Chemotherapy, Repeat allogeneic bone marrow transplant	Alive, 75 months
5	Aki et al.	2002	36	M	None	Fatigue, pollakiuria, pain, hematuria	Left antero-lateral wall, 76 x 67 x 36 mm	NR	Combination chemotherapy (Ara-C, Idarubicin)	Death due to sepsis day 16 of treatment
6	Kerr et al.	2002	80	F	RAEB	Dysuria, haematuria	Left antero-lateral wall 20 x 20 mm	NR	Local radiotherapy	Recurrence
7	Uner et al.	2004	57	F	None	Urinary incontinence and fatigue	Trigone, 74x21 mm	NR	Combination chemotherapy (Ara-C, Idarubicin); external radiotherapy	NED, 1 month
8	Al-Quran et al.	2006	47	M	None	Haematuria, flank pain, right testicular swelling	Trigone 40x20x30mm, right epididymis 40 mm	Bone marrow 47, XY, inv(16), +22; Bladder inv(16) by FISH	Combination chemotherapy (Ara-C, Idarubicin)	NED, 32 month
9	Our case	2009	72	F	RAEB	Haematuria, suprapubic pain	Base of bladder, 25 mm	Bone marrow, 47,X X + 8 [13] 46,XX, 7q- [9]	Chemotherapy: Ara-C	?

NR indicates not reported, ML, myelogenous leukemia; NA, not applicable; Ara-C, cytosine arabinoside hydrochloride; NED, no evidence of disease; AML-M2, acute myeloid leukemia-M2; RAEB, refractory anemia with excess blasts; FISH, fluorescence in situ hybridization.

the course of AML. Its rarity therefore reasonably explains the high frequency of misdiagnosis of up to 75% in the absence of prior proliferative hematological disease and 47% of MS were initially diagnosed as malignant lymphoma [3, 9]. In fact, all of the Breccia et al. cases were first labeled as non-Hodgkins lymphoma and the reasons being the similar appearance of the blasts to large-cell lymphoma and the presence of lymphoglandular bodies, eosinophilic myelocytes, and the scarcity of Auer rods [3, 10]. Aki et al. [2] described a primary case of bladder MS that was initially diagnosed as transitional cell carcinoma and treated with combination therapy. The correct diagnosis was only made after disease progression and repeat biopsy. Compounding the issue of rarity is the various terminologies used to describe basically the same disease. In this regard, there are at least 5 other names for MS and these include chloroma, granulocytic sarcoma, monocytic sarcoma, myeloblastoma, and extramedullary myeloid cell tumor [11]. Uniformity in terminology used would have been desirable for the ease of understanding the disease and for the benefit of patients. Although it is typically found in patients under the age of 15 and between the ages of 20 and 44, MS could occur at any age, such as in our case [3]. The presentation in a case of bladder MS is nonspecific. A typical symptom is hematuria followed by dysuria, although pollakiuria, urinary incontinence, and fatigue have been described [11]. The various literatures also did not describe any specific cystoscopic finding relevant to MS; thus the diagnosis depends on histopathological finding, and the provision of a positive history of proliferative hematological disease should prove helpful. Its presence of undifferentiated blasts and immature cells therefore warrants the use of myeloid markers for diagnosis [2, 9]. Known to be an aggressive form of AML, patients with MS have a median survival of 7 months once a diagnosis of MS is made, and 3 months when there is a manifestation of AML [3]. The survival could be improved if the diagnosis is picked up early and appropriate treatment initiated promptly. Complete remission or even cures have been observed in some patients [11]. In this regard, systemic therapy prolonged the survival to 40.5 months as compared to local therapy in which the survival was 26 months [12]. However, whether local or systemic therapy is instituted, it is considered palliative since the survival is short in almost all cases once there are extramedullary lesions [1].

Given the small number of cases of bladder MS, a compilation of various case reports should be useful for the purpose of study. Al-Quran et al. [11] made such a table in their case report in 2006 highlighting the previous 7 as well as their cases, 4 of which are primary and the other 4 have a prior history of various types of proliferative hematological disease. Ours should be numbered ninth as a whole and a fifth case of "secondary" (Table 1).

In summary, although MS is rare, recognizing this disease early might prolong survival and perhaps result in avoiding unnecessary and irrelevant investigation and treatment.

REFERENCES

1. Gittin RG, Scharfman WB, Burkart PT. Granulocytic sarcoma: three unusual patients. Am J Med. 1989;87(3):345–347. PubMed ; CrossRef

2. Aki H, Baslar Z, Uygun N, Ozguroglu M, Tuzuner N. Primary granulocytic sarcoma of the urinary bladder: case report and review of the literature. *Urology*. 2002;60(2):345. PubMed ; CrossRef

3. Breccia M, Mandelli F, Petti MC, et al. Clinico-pathological characteristics of myeloid sarcoma at diagnosis and during follow-up: report of 12 cases from a single institution. *Leuk Res*. 2004;28(11):1165–1169. PubMed ; CrossRef

4. Kerr P, Evely R, Pawade J. Bladder chloroma complicating refractory anaemia with excess of blasts. *Br J Haematol*. 2002;118(3):688. PubMed ; CrossRef

5. Neiman RS, Barcos M, Berard C, et al. Granulocytic sarcoma: a clinicopathologic study of 61 biopsied cases. *Cancer*. 1981;48(6):1426–1437. PubMed ; CrossRef

6. Tsimberidou AM, Kantarjian HM, Estey E, et al. Outcome in patients with nonleukemic granulocytic sarcoma treated with chemotherapy with or without radiotherapy. *Leukemia*. 2003;17(6):1100–1103. PubMed ; CrossRef

7. Ansari-Lari MA, Yang CF, Tinawi-Aljundi R, et al. *FLT3* mutations in myeloid sarcoma. *Br J Haematol*. 2004;126(6):785–791. PubMed ; CrossRef

8. Novick SL, Nicol TL, Fishman EK. Granulocytic sarcoma (chloroma) of the sacrum: initial manifestation of leukemia. *Skeletal Radiol*. 1998;27(2):112–114. PubMed ; CrossRef

9. Hasegeli Uner A, Altundag K, Saglam A, Tekuzman G. Granulocytic sarcoma of the urinary bladder. *Am J Hematol*. 2004;75(4):262–263. PubMed ; CrossRef

10. Suh YK, Shin HJ. Fine-needle aspiration biopsy of granulocytic sarcoma: A clinicopathologic study of 27 cases. *Cancer*. 2000;90(6):364–372. PubMed ; CrossRef

11. Al-Quran SZ, Olivares A, Lin P, Stephens TW, Medeiros LJ, Abruzzo LV. Myeloid sarcoma of the urinary bladder and epididymis as a primary manifestation of acute myeloid leukemia with inv(16). *Arch Pathol Lab Med*. 2006;130(6):862–866. PubMed

12. Byrd JC, Edenfield WJ, Shields DJ, Dawson NA. Extramedullary myeloid cell tumors in acute nonlymphocytic leukemia: a clinical review. *J Clin Oncol*. 1995;13(7):1800–1816. PubMed