



In the name of God

Presented by F.Malek M.D

Assistant Professor of Pediatric Hematology & Oncology

SBMUS Mofid children's Hospital

Renal Failure and Bilateral Hydronephrosis as Signs of Extramedullary Acute Myelogenous Leukemia

- Fatemeh Malek1*, Mitra Khalili
- Pediatric Congenital Hematologic Disorders Research Center, Research Institute for Children's Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Introduction

- Extramedullary leukemia is prevalent in pediatric acute myeloid leukemia (AML) and transpires as a solid tumor (myeloid sarcoma).
- Myeloid Sarcoma seen in patients with leukemia may occupy any part of the body.
- The most popular sites for MS deposits are skin (leukemia cutis), lymph nodes, bones, gastrointestinal tract, soft tissues, and gingivae.

Introduction

- The spinal column is **much less generally affected, with an incidence rate of 13%–19%**.
- The **thoracic spine (64%)** is the most frequent site, accompanied by the lumbar, sacral, and cervical spine with a frequency rate of 29%, 20%, and 5%, respectively.

Case presentation

- A 4 year old girl was admitted in our hospital with initial diagnosis of Acute Myeloid Leukemia M4.
- The initial symptoms were fatigue and bone pain patient underwent bone marrow aspiration which was compatible with AML M2.
- Patient was an only child from non consanguineous parents.
- Patient was suffering from acute renal failure and had received hemodialysis in another center for 3 sessions.

Initial Laboratory Exams

CBC		
Test		Result
W.B.C		2.9
R.B.C		3.49
Hb		10.9
HCT		28
MCV		80.23
MCH		31.23
MCHC		25.69
PLT	*	41

Initial Laboratory Exams

Test	Result	Unit	Normal Range
BUN	14.9	mg/dL	7-17
Creatinine	* <u>H</u> 2.9	mg/dL	Adult: male :0.7- Adult Female :0.6
Ca	10.3	mg/dL	8.6 - 10.3
Phosphorus	5.6	mg/dL	Child : 3-7 adult : 2.7-4.5
AST	34	U/L	Female:<31 Male:<37
ALT	5	U/L	Male: Up to 41 Female: Up to 31
Uric acid	3.4	mg/dL	1.7-5.1

* Rechecked

Comment : دوبار چک شد. در صورت نیاز جهت چک مجدد نمونه جدید ارسال شود :

Initial Laboratory Exams

CBC	
WBC	7.9
RBC	4.02
Hb	11.8
HCT	34.6
MCV	82.99
MCH	27.94
MCHC	29.20
PLT	57
SDW	14.4

Biochemistry			
Test	Result	Unit	Normal Range
BUN	8	mg/dL	7-27
Creatinine	0.4	mg/dL	Adult Male (0.7-1.4) Adult Female (0.6-1.3)

Page 17 of 21

برگ الحاق گزارش آزمایشگاه

17

Initial Laboratory Exams

Test	Result	Unit	Normal Range
Creatinine	4.1	mg/dL	Adult male 0.7-1.4 Adult female 0.4-1.1
Ca	10.8	mg/dL	9.4 - 10.3
Phosphorus	7.2	mg/dL	Child 3-7 Adult 2.7-4.5
ALP	223	U/L	100-1200
AST	15	U/L	Female < 31 Male < 37
ALT	10	U/L	Male up to 41 Female up to 31
Uric acid	1.7	mg/dL	1.7-5.1

Technician - شوكه

Rechecked 1397/12

Bilirubin			
Test	Result	Unit	Normal Range
Bilirubin T	0.9	mg/dL	< 0.3
Bilirubin D	0.2		

Technician - شوكه

Electrolyte			
Test	Result	Unit	Normal Range
Na	128	meq/L	135-145

بورت نیاز با نمونه کی جدیدتکرار شود (1397/12/24 09:31) Biochemistry

BS	94
BUN	36
Creatinine	3.5
Ca	10.1
Phosphorus	8.4
Alk P	159
AST	32
ALT	10
Uric acid	10.6
Mg	2.6

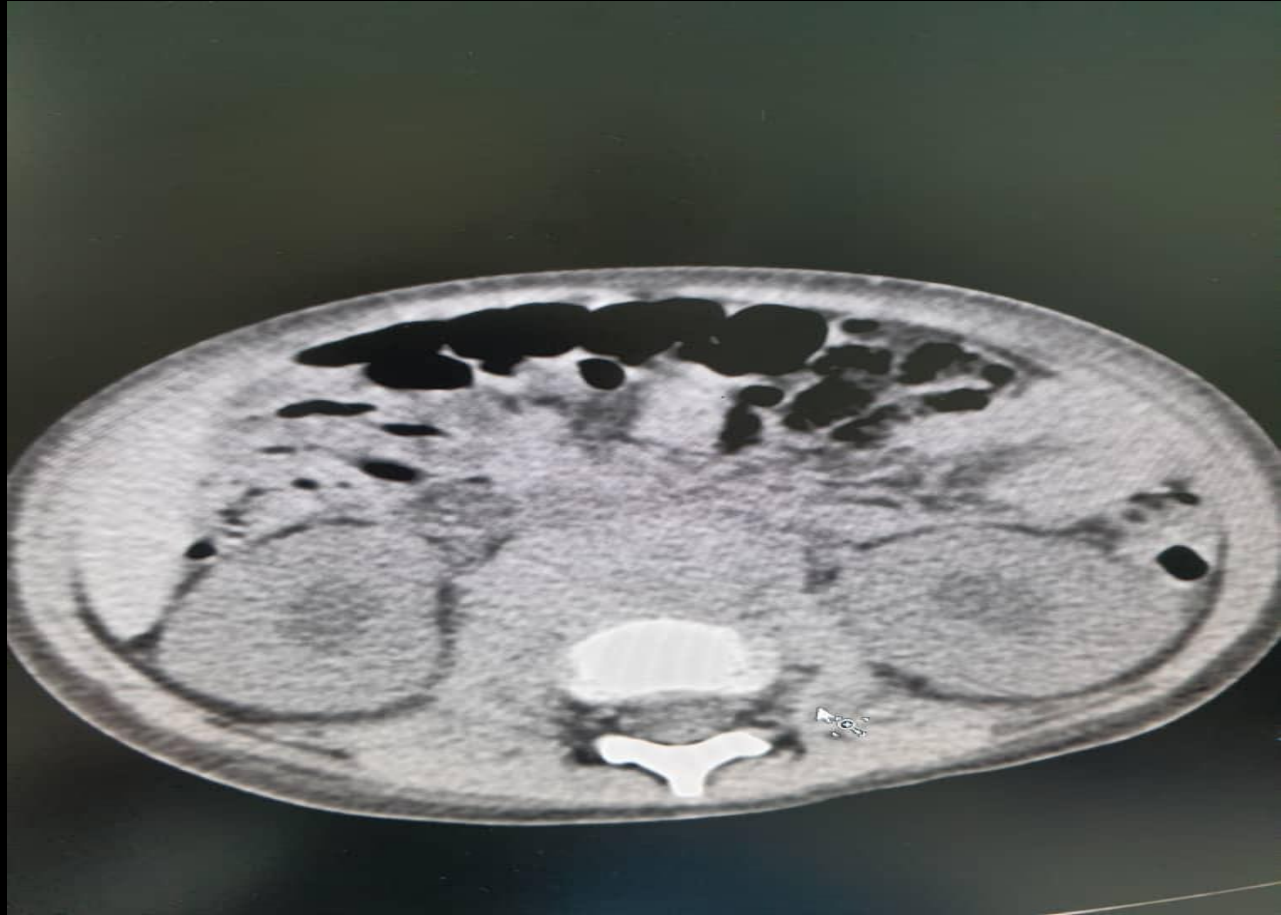
(1397/12/24 09:31) Blood Culture-X1

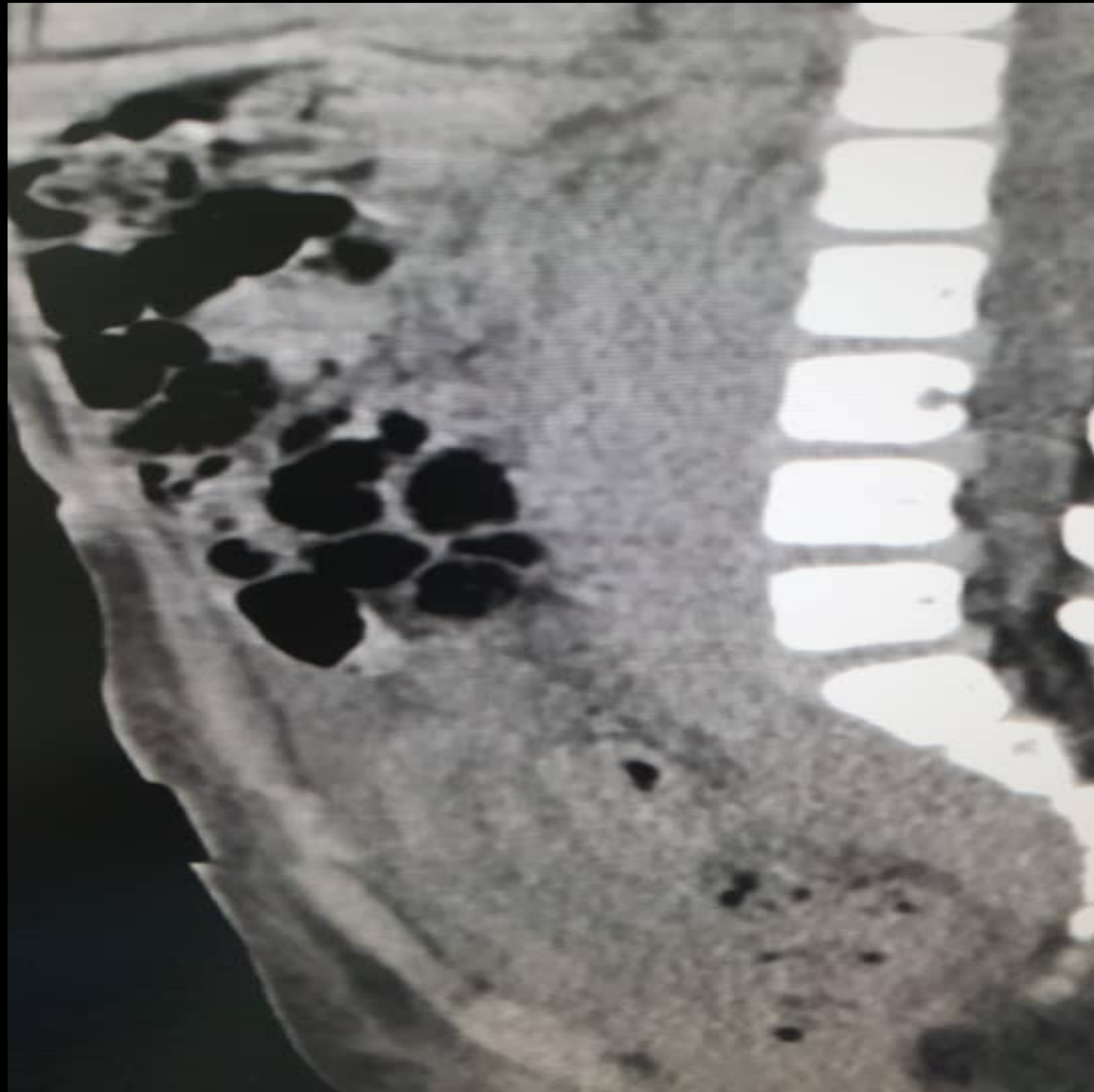
blood Culture No growth after 24 h



- Due to Acute renal failure patient received hemodialysis to reduce the creatinine although the renal failure etiology was related to a large prevertebral mass encasing bilateral ureter causing bilateral hydronephrosis .
- Hence patient underwent biopsy from retroperitoneal region which the pathology report was compatible with AML.
- Continuing hemodialysis and Initiation of chemotherapy MRC Cycle 1 protocol caused resolution of retroperitoneal mass that was encasing ureters .

- Eventually creatinine serum level was within normal range and nephrology consultation mentioned no need for further hemodialysis.





- Myeloid sarcoma (MS) is a malignant extramedullary tumour, which consists of immature cells of myeloid origin.
- It may occur *de novo*, concurrently or precede the diagnosis of acute myeloid leukemia (AML), myelodysplastic syndrome (MDS) or chronic myeloid leukemia (CML).
- The more frequent sites of involvement are the skin, orbit, bone, periosteum, lymph nodes, gastrointestinal tract, soft tissue, central nervous system and testis.

- Because of its different localization and symptoms, and the lack of diagnostics algorithm, myeloid sarcoma is a real diagnostic challenge, in particular in patients without initial bone marrow involvement.
- The correct diagnosis of MS is important for adequate therapy, which is often delayed because of a high misdiagnosis rate.
- A diagnosis of MS is based on a combination of clinical features, radiological investigations, and immunohistochemistry.^[4] Clinical presentation is depended on size and localization

References

- Kobayashi R, Tawa A, Hanada R, Horibe K, Tsuchida M, Tsukimoto I; Japanese childhood AML cooperative study group. Extramedullary infiltration at diagnosis and prognosis in children with acute myelogenous leukemia. *Pediatr Blood Cancer*. 2007 Apr;48(4):393-8. doi:
- Liu R, Du J, Gao L, Liu Y, Liu S. Myeloid sarcoma of the nasal cavity in a 15-month-old child: a case report. *Medicine*. 2020;99:27(e21119).
- Gözdaşoğlu, S., Yavuz, G., Ünal, E. *et al.* Orbital granulocytic sarcoma and AML with poor prognosis in Turkish children. *Leukemia* **16**, 962 (2002). <https://doi.org/10.1038/sj.leu.2402449>
- Rénard C, Girard S, Pracros JP, Dijoud F, André JM, Mialou V, Bertrand Y. Le sarcome granulocytaire, un diagnostic à connaître : à propos de 3 observations pédiatriques [Granulocytic sarcoma, a diagnostic challenge: 3 pediatric cases]. *Arch Pediatr*. 2010 Feb;17(2):149-53. French.