

()

가 , -

:	()	
	20	,
:	1998 4 2004 9	20
	2,197	
(0.91%)	, 1-78 (18)	.
:	1998 4 2004 9 6 5	
	가 1,331 15 , 744 4	
,	122 1 가 2,197	
20	0.91%	28.3 (4~52) , 13 ,
7	11 , 9 , 12 ,	
5 , 6 , 2 , 2 , 1		.
	(acute myelogenous leukemia, AML) 15 ,	
	(chronic myelogenous leukemia, CML) 4	
(acute biphenotype leukemia)	1 20	.
		8 ,
4		,
12		. 6
		,
	, 6	
	18	
4	12 (12/20: 60%)	
6.5		.
:		,
	가 , , ,	
		.
:		,

(extramedullary myelosarcoma) (granulocytic sarcoma) 1998 4 2004 9 20 가 13 , 가 7 , 10). (acute myelogenous leukemia, AML), 28.3 (Table 1). (chronic myelogenous leukemia, CML) 12 , 7 , 1 myeloperoxidase (chloroma) 6 7). 20 3,500 rads 4 17.5 (1 ~ 78) (Table 1). 20

Table 1. clinical analysis of granulocytic sarcoma

case	sex/age	previous Dx	lesion	Treatment	Px	Bx	dis. state
1	M/38	CML	L-spine & brain	RT + CTx	expire		C/R state
2	M/28	CML	Lt humerus	CTx	expire	yes	C/R state
3	M/19	AML(M2)	T-L spine	RT	expire		progression
4	M/44	AML(M2)	Lt tibia & Rt foot	RT	S/R for 1 yr 9 mon	yes	C/R state
5	F/26	AML(M2)	T-spine	RT + CTx	S/R for 6 yr 3 mon		C/R state
6	M/36	CML	C & L-spine	RT + CTx	expire		C/R state
7	F/20	AML(M2)	D-spine & brain	RT	expire		progression
8	M/15	CML	Rt knee	CTx	expire	yes	C/R state
9	F/28	AML(M2)	sacrum & brain	RT	expire		C/R state
10	M/40	AML(M0)	brain	RT	expire		progression
11	M/21	AML(M2)	D & L spine & brain,chest	RT + CTx	S/R for 4yr 2 mon		progression
12	M/34	AML(M2)	D-spine	RT + CTx	expire		C/R state
13	M/18	AML(M2)	temporal bone	RT + CTx	expire		progression
14	M/52	AML(M2)	pelvis & both femur	CTx	S/R for 2 yr 10mon	yes	progression
15	M/9	Acute biphenotype	D-spine	RT	expire		progression
16	M/26	AML(M3)	upper D spine & chest	CTx	S/R for 2yr 8mon		progression
17	F/35	AML(M2)	D-spine	RT + CTx	expire	yes	progression
18	F/43	AML(M2)	T-L spine	RT + CTx	S/R for 1yr 3mon		progression
19	F/29	AML(M5)	Orbit	RT + CTx	S/R for 1yr 3mon		progression
20	F/4	AML(M2)	Lt tibia	CTx	S/R for 5mon	yes	progression

*AML: acute myelocytic leukemia *CML:chronic myelocytic leukemia
 *RT: Radiation therapy *CTx: chemotherapy *C/R: complete remission
 *S/R: survival & remission

가

9 , 11 , 4 1
 12 가 가 2004 8
 (AML) 2003 4
 15 (CML)
 4 가 (acute 가 5×5×4
 biphenotype leukemia) 1 가 cm

8 , 4 가 (Fig. 1). 2004. 8. 21.
 가

12

(Fig. 2).

(Fig. 3),

1998 4 2004
 9 가
 1,331 15 (1.12%), 744
 4 (0.53%), 122 (com-
 1 (0.8%)가 plete remission)
 2,197 20 0.91% 가
 2004. 10. 13

가 , 15

18 20
 12 60%

6.5
 (4)

(Table 1).

10).

— : () —

Case 1. 4yr girl. granulocytic sarcoma associated with acute myelocytic leukemia



Fig. 1. (A, B) Plain X-ray showing cortical thickening with lamellated and periosteal reaction at the left proximal meta-diaphysis and diaphysis of tibia. Soft tissue swelling associated with striation was found in the adjacent anterior tibial aspect.



Fig. 2. (A,B,C,D) MR image showing relatively homogenous high signal intensity lesion at the meta-diaphysis of Lt tibia in the T2 weighted image. This lesion appears bulging like lesion around periosteum and infiltration to posterior muscular portion & bulging mass formation at the pretibial region. After enhancement, homogenous well visualized lesion is noted.

1~2
3,10). Imrie⁶⁾

(blastic crisis)
(leukemic transformation)
가⁸⁾.

가 .

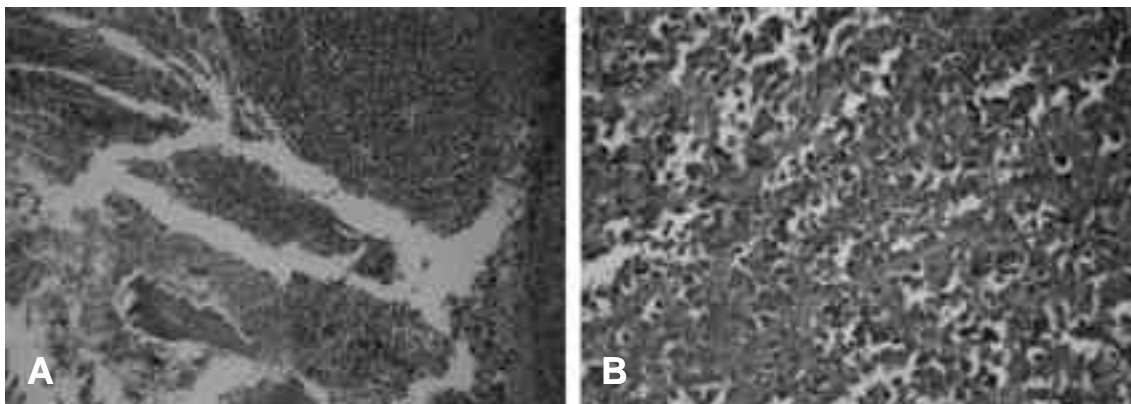


Fig. 3. (A) The biopsied specimen shows infiltration of myeloblasts and eosinophils in the mass (H&E, $\times 20$).
(B) A dense composed of immature and mature polymorphonuclear lymphocytes are also seen (H&E, $\times 400$).

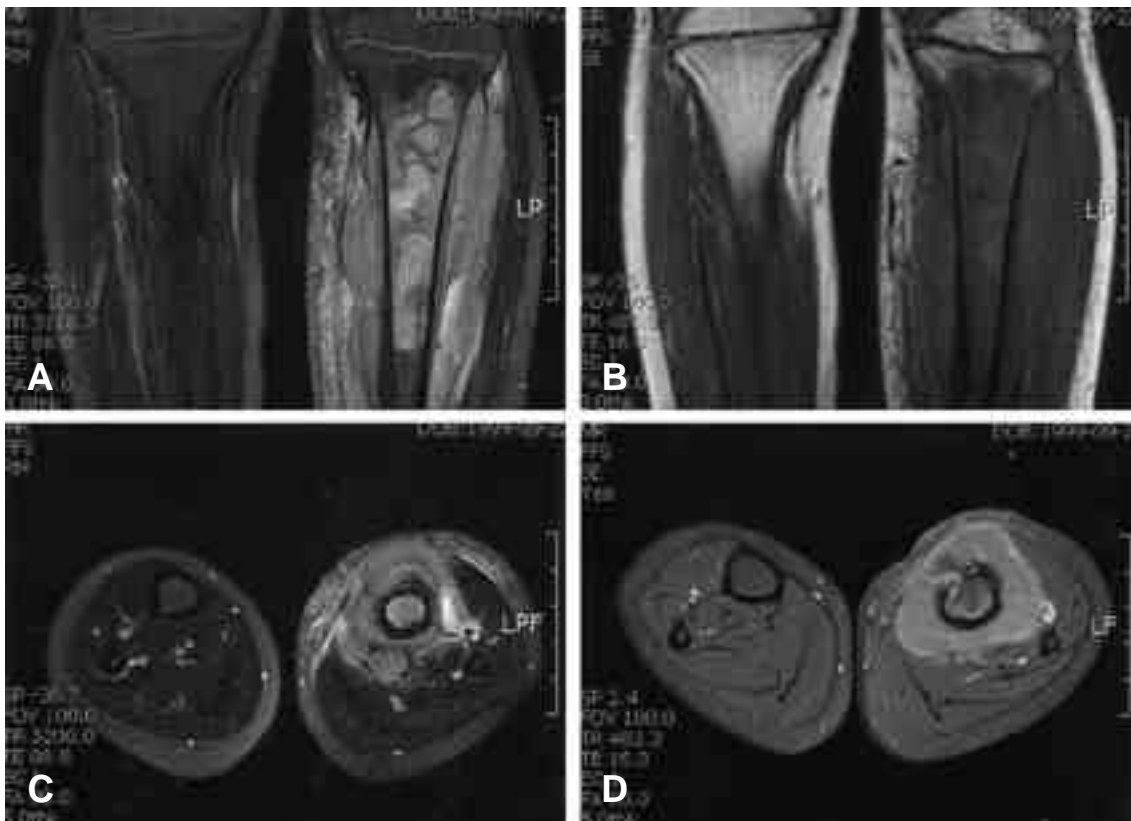


Fig. 4. (A,B,C,D) After chemotherapy, the sarcomatous soft tissue were changed to necrotic state and shrunk.

— : () —

가

가

1811 Burns²⁾가

. 1893 Dock

, 1966 Rappaport¹⁾가

. 1853 King⁷⁾

Myeloperoxidase

가

가

4,12,13)

Muss⁹⁾

4.5% ,

(2.55% ~ 4.5%⁸⁾)

0.91% .

2.55%

3.1%

0.91%

60%

M2 (type)

가

(polycytheima

(hypereosinophilia),

vera),

(myeloid metaplasia)

4,8,10,11)

가

1998 4 2004 9 가

4,10,11)

2,197

3~8 cm

1998 4 2004

9 6 5

가

1,331 15 ,

744 4 ,

122 1 가

2,197 20

0.91%

⁵⁾.

28.3 (4~52) ,

13 , 7

11 ,

9

12 ,

5 ,

6

2 ,

2 ,

1

(myelocyte)

¹⁾.

(AML) 15 ,

(CML) 4

, (acute biphenotype leukemia) 1

20

8 , 4

, 12

. 6

, 6

. 18

4

12 (12/20 :

60%)

6.5

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Abstract

Granulocytic Sarcoma(Chloroma) in Leukemic Patients

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Purpose: The granulocytic sarcoma which developed in leukemic patients are quite rare and it will have bad prognosis, but it 's tumor pathogenesis and also their treatment are not yet established. Through this study we have tried to know their clinical course, prognosis and their end result of recent treatment.

Material and Methods: Total 20 patients of granulocytic sarcoma which were developed in total 2,197 leukemic patients from April, 1998 to September, 2004 were treated at the leukemic center and the orthopaedic department of St. Mary 's hospital, Catholic University of Korea, and followed them for 1~78 months(average 18 months).

Results: Total 20 cases of granulocytic sarcoma was found in 14 cases of total 1,331 acute myelocytic leukemic patients(AML), 4 cases of total 744 of chronic myelocytic leukemic patients(CML), and only one case in total 122 of acute biphenotype of leukemia. And so their occurrence rate in leukmic patients are actually 0.91%, total 20 cases of granulocytic sarcoma in total 2,197 leukemic patients at same period. Their ages are average 28.3 years(4~52 years), and male are predominant(13 cases) than female(7 cases). Single involvement was found in 11 cases but multiple lesions are in 9 cases, and spine, brain, extremities, chest, and pelvic bone are involved in frequency. The granulocytic sarcoma was developed in various stages of the leukemia, ie, 8 cases in complete remission of leukemia, and 12 cases in the treatment process of AML. The pathohistologic evaluation of granulocytic sarcoma was done in 6 cases which was developed in their extremities, and confirmed numerous immature myeloblasts and lymphocytes mixed. The treatment of these granulocytic sarcoma was mainly limited for the treatment of leukemia by Glivac and massive steroid therapy(19cases) and also combined with the bone marrow transplantation(13 cases), but radiation therapy with average 3,500 rads in 15 cases out of total 20 sarcomas was also done, and followed them for average 17.5 months after development of granulocytic sarcomas. Finally their prognosis was so bad that 12 patients(60%) out of total 20 granulocytic sarcoma were dead in 6.5 months after sarcoma developed and we found the granulocytic sarcoma was more fatal if they are developed during the process of CML(mortality:100%(4/4cases)).

Conclusion: The prognosis of granulocytic sarcomas in leukemic patients are quite fatal, and much more studies for their pathogenesis and ways of treatment should be performed continuously.

Key Words: Granulocytic sarcoma, Chloroma, Leukemia

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