

## **Granulocytic Sarcomas in Acute Non-Lymphocytic Leukemia**

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Granulocytic sarcoma is a localized tumor mass composed of immature cells of granulocytic series(1). These tumors are not uncommon in acute non-lymphocytic leukemias (ANLL), particularly in childhood(1-4). Though originally described as an ocular tumor, they have been detected in various organs of the body(5). Granulocytic sarcomas appear to show a considerable geographical variation, being rare in Western countries but not uncommon in Uganda, Egypt, Turkey and Japan(2,3,6-10). The paucity of data from our country prompted us to evaluate these cases.

### **Subjects and Methods**

All cases of acute leukemia admitted in the pediatric ward of Maulana Azad Medical College and associated Lok Nayak hospital, New Delhi from October 1988 to January 1991 were included. Acute leukemia was diagnosed and classified using the FAB system of classification(11). Cytochemistry including peroxidase, periodic acid schiff, nonspecific esterase were carried out in all cases. In 3 cases,

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as cytochemistry could not clinch the diagnosis, immunophenotyping was done.

All the cases were entered in a specially designed proforma in which a detailed record of their clinical presentation, investigations, treatment, follow up and outcome was recorded. Granulocytic sarcoma when evident or suspected was confirmed by FNAC. CT scan of the head was done wherever feasible or required.

### **Results**

Of 61 patients with acute leukemia, 35 were ALL and 26 had ANLL. Eleven patients of ANLL showed granulocytic sarcomas. Their clinical features are shown in *Table I*. Ocular involvement (*Fig. 1*) was seen in 10 patients. The clinical manifestations in the eye included unilateral or bilateral proptosis, chemosis, papilledema, keratomalacia and eyelid chloroma. The other sites involved included the vertebral bodies and the scalp in two patients each and the kidney and brain parenchyma (*Fig. 2*) in one patient each. FAB classification of the cases of ANLL with granulocytic sarcoma showed seven cases of M2, two of M5 and one each of M1 and M4 types.

### **Discussion**

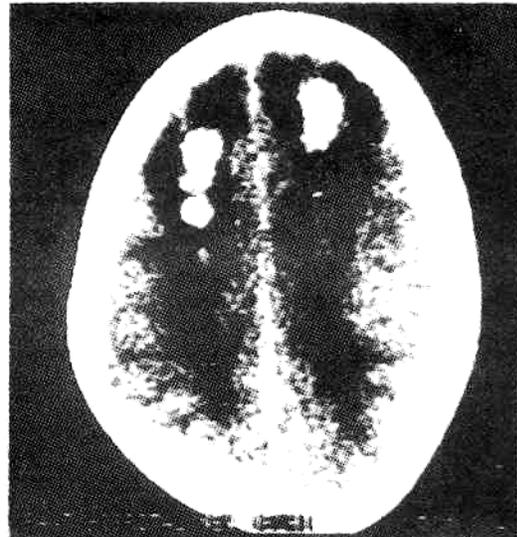
The overall prevalence of granulocytic sarcoma in our study was 18.0% of acute leukemia patients and 42.3% of children with ANLL. The actual prevalence, however, could be higher and cannot be commented upon as no autopsies were performed. The prevalence of granulocytic sarcoma ranges from 3% in Holland to 46% in Uganda(2-10). Nieman *et al.*(4) found granulocytic sarcoma in all biopsied cases of AML and suggested that the tumor was frequently unrecognized during life.

**TABLE I—Characteristics of Patients with ANLL and Granulocytic Sarcoma**

Case no.	Age (Yr)	Sex	FAB subtype	Site(s) of sarcoma
1	12	M	M 1	Ocular, brain, vertebrae
2	8	M	M 5	Ocular, kidney
3	6	M	M 2	Ocular
4	14	M	M 2	Ocular
5	2	F	M 5	Ocular
6	11	M	M 4	Ocular
7	3	M	M 2	Ocular, scalp
8	8	M	M 2	Ocular
9	9	M	M 2	Vertebral
10	4½	M	M 2	Ocular
11	12	M	M 2	Ocular



*Fig. 1. Ocular Granulocytic Sarcoma in a 1 year old boy.*



*Fig. 2. Intracranial deposits of granulocytic sarcoma as seen in CT Scan in a 12 year old boy.*

The male preponderance of granulocytic sarcoma as observed in the present study has also been reported by other authors(3,4). Although all our patients had leukemia at the time of n

diagnosis, it is known that the sarcomas may manifest in the preleukemic phase. Such cases invariably progress to ANLL within a few months. Such cases, therefore, demand a high index of suspicion and

close watch by clinicians and the pathologists(1,4).

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