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EVALUATION OF PLASTICE ANEMIA

1. **MUZAFFAR A. SHAIKH**
M.B.B.S., M.D (Medicine), D.T.C.D
2. **ALTAF HUSSIANABBASI**
M.B.B.S., (M.D Medicine)
3. **RAHEEM A.SOLANGI**
M.B.B.S., D.T.C.D, (M.D Medicine)
4. **NARINDER MAHESHWARI**
M.B.B.S., F.C.P.S. Resident)
5. **DARSHANA KUMARI**
Final year M.B.B.S. Student

1. ***Associate Professer***
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN
2. ***Medical Officer***
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN
3. ***Senior Medical Officer***
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN
4. ***Resident Medical Officer***
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN
5. ***Final Year Student***
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN

Correspondence:
MUZAFFAR A. SHAIKH
M.B.B.S., M.D (Medicine), D.T.C.D
Associate Professer
Department of Medicine
LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES (LUMHS) JAMSHORO, SINDH, PAKISTAN
E-mail: drmuzafarali@hotmail.com
Phone: 0300-9374664

ABSTRACT

OBJECTIVE: *to evaluate date on the demographic feature of patients diagnosed to have aplastic anemia at Liaquat University of Medical and health Sciences Hyderabad / Jamshore, from March 207 to August 2008.*
STUDY DESIGN, PLACE AND DURATION: *Descriptive observational study, Medical Units of Liaquat University Hospital Hyderabad / Jamshoro, form March 2007 to August 2008.*
PATIENTS AND METHODS: *Out of 200 subjects 50 were diagnose with demographic features of aplastic anemia. The diagnosis of aplstic anemia was done by.history and clinical examination, complete blood count, reticulocyte count and confirmed by bone marrow trephine. All those patients who had aplastic anemia based on bone marrow trephine and patients of age?15 years both male and female were included and those who were less then 15 years old and in whom diagnoses was not confirmed by bone marrow trephine.*
RESULT: *In our study out of these 50 subjects 25(50%) were diagnosed as severe aplastice anemia, 10(20%) patients had very severe aplastic anemia, 05(10%) had non-severe aplastic anemia, 05(10%) were associated with hepatitis C aplastic anemia and remaining 05(10%) were of other type of aplastic anemia.*
CONCLUSION: *Aplastic anemia is a commonly seen more in males as compared to females and severe aplastic anemia is most common among both male and females. Aplastic anemia is the important cause of morbidity and the mortality and is also associated with hepatitis.*

KEY WORDS: Aplastic anemia, International Agranulocytosis and Aplastic Anemia Study, Bone marrow.

INTRODUCTION:
Aplastic Anemia (AA) is defined as pancytopenia accompanied by a hypocellular bone marrow[1]. Laboratory and clinical observations have implicated an immunologic path physiology. As with other autoimmune diseases, both environmental triggers and individual host factors are hypothesized to determine risk. AA has long been linked to exposure to benzene, pesticides, and other chemicals[2]. Marrow failure is a severe idiosyncratic complication of the use of certain medical drugs, most infamously chloramphenicol[2]. It can follow specific viral infections, a in postseronegative hepatitis[3] and it is a rare complication of pregnancy[4]. Clusters of AA have been reported [5-8]. nevertheless, mechanisms linking environmental triggers to bone marrow failure are poorly defined, and most cases are labeled idiopathic.
The incidence of aplastic anemia shows geographical variability. It seems to be lower in Europe, North America and Brazil, and higher in Asia. Based on the two epidemiological studies carried out in Eurpoe and Asia that used the same methodology, the incidence of the disease is 2 to 3 fold higher in Asia than in the West [9]. This variability in incidence rates may reflect differences in exposure to environmental factors including viruses, drugs and chemicals, genetic background, diagnostic criteria, and study designs. The case fatality rate of severe aplastic anemia is high although treatment, whether by allogenic stem-cell transplantation or immunosuppression, has dramatically improved the prognosis over the last 25 years, and more than 75% of patients with sever aplastic anemia is influenced by patients' variables such as severity of the disease and age, but also by the choice of the initial treatment[10]. the purpose of our study is to complete the data on the demographic feature of patients diagnosed to have aplastic anemia, admitted in Liaquat University Hospital Medical Wards Jamshoro / Hyderabad.

PATIENTS & METHODS:

This is hospital based descriptive observational study in which we have recruited 200 subjects admitted in all four medical units of Liaquat University Hospital Hyderabad / Jamshoro., from march 2007 to August 2008. Out of 200 subjects 50 were diagnosed with demographic features of aplastic anemia. The diagnosis of aplastic anemia was done by history and clinical examination, complete blood count, reticulocyte count and confirmed by bone marrow trephine. Classification of severity of aplastice anemia was based on standard diagnostic criteria for aplastic anemia[11].

1. Severe Aplastice Anaemia (SAA)

a. Peripheral Blood showing at least two of the following characteristics.

i. Absolute neutrophil count<$0.5x10^{9/1}$.

ii. Platelet count of < $20x10^{9/1}$.

iii. Corrected Reticulocyte count < 01%.

b. Bone marrow showing: Cellularity of < 25% of normal or Cellularity 25-50% of normal with < 30% remaining cells being haemopoietic.

2. Very Severe Aplastic Anemia (VSAA)

All the features are same as in SAA but absolute neutrophil count is < 0.2x10.

3. Non severe Aplastic Anaemia (NSAA)

a. At least Two of the following blood parameters:

i. Haemoglobin < 10.0g/dl or haematocrit < 30%,

ii. Total Leukocyte Count < $3.5x10^{9/1}$.

iii. Platelet Count < $50x10^{9/1}$.

b. Bone marrow showing the following characteristics:

i. A decrease in cellularity with the absence or depletion of all haemopoietic. Cells or normal cellularity due to focal erythoid hyperplasia with depletion or granulo-poitic cells and megakaryocytes.

ii. The absence of significant fibrosis and / or neoplastic infiltration.

All those patients who had aplastic anemia based on bone marrow trephine and patients and patients of age > 15 years both male and female were included in the study. Those patients who were less then 15 years old and those in whom diagnosis was not confirmed by bone marrow trephine were excluded from the study.

DATA ANALYSIS:

The data were evaluated in statistical program SPSS (Statistical Program for Social Sciences) version 14.0.frequencies and percentages were calculated and chi square test was applied on 95% confidence interval

Table –I
Basic social-demographic characteristics of patients (n-50)

Age (in years) Mean + SD (Range)	**25.5 + 6.03(15-50)**
Age Group:	**n(%)**
15-29	46(92)
30-50	4(08)
Gender:	
Male	35(70)
Female	15(30)
Locality:	
Rural	27(54)
Urban	23(46)
Income Groups:	
Poor	33(86)
Middle	17(34)
Smoking Status:	
Smoker	38(76)
Non-Smoker	12(24)

Table –II
DISTRIBUTION OF APLASTIC ANEMIA ACCORDING TO SEVERITY (N = 50)

Parameters	**Patient N (%)**
Severity:	
SAA	25(50%)
VSAA	10(20%)
NSAA	05(10%)
VSAA	05(10%)
VSAA	05(10%)

SAA = Severe aplastic anemia
VSAA = Very Severe aplastic anemia
NSAA = Non- Severe aplastic anemia
HAAA = Hepatitis associated aplastic anemia
OTHAA = Other Severe aplastic anemia

Table –III
DISTRIBUTION OF APLASTIC ANEMIA ACCORDING TO GENDER (N = 50)

Parameters	**Male (n=35) n (%)**	**Female (n=15) n (%)**
Severity:		
SAA	18(51.4%)	07(46.7)
VSAA	07(20%)	03(46.7)
NSAA	02(5.7%)	03(46.7)
HAAA	03(8.6%)	02(46.7)
OTHAA	05(14.3%)	0
TOTAL	**35(100%)**	**15(100%)**

SAA = Severe aplastic anemia
VSAA = Very Severe aplastic anemia
NSAA = Non- Severe aplastic anemia
HAAA = Hepatitis associated aplastic anemia
OTHAA = Other Severe aplastic anemia

amoug the categorical parameters.
Student *t* test (Mean + Standard Deviation) was used among the continuous variables such as age (in years) to compare the means (2 tailed)

RESULTS:
A total of 200 subjects were included in this study, out of 200 subjects 50 were diagnosed with demographic features of aplastic anemia. Among 50 subjects with mean age of 25.5 + 6.03 and their range was 19-50 years, 25(50.0%) were diagnosed as a severe aplastic anemia, 10(20.0%) patients had very severe aplastic anemia, 05(01.0%) were associated with hepatitis C aplastic anemia and remaining 05(10.0%) were of other type of anemia. 46(92%) patients were in 15-30 years age group and 04(8%) patients were in 31-50 years in age group. Compared with study done at Aga Khan University Hospital Karachi shows that 74(51.4%) had severe aplastic anemia, 24(16.7%) had very severe aplastic anemia, forty six (31.9%) were diagnosed to have non-severe aplastic anemia, 4(2.79%) patients were associated with hepatitis-B aplastic anemia and 3(2.09%) patients had Hepatitis-C out 143 subjects. Compared with study from Taiwan and Thailand also reveal a high incidence of hepatitis associated aplastic anemia. One study done at U.K compared with our study shows that 21 patients had severe aplastic anemia. 14 as very severe aplastic anemia, 11 had non-severe aplastic anemia and 17 were diagnosed hepatitis associated aplastic anemia. Our study shows slightly higher incidence of aplastic anemia occur in your adult male than female including 35(70.0%) young male and 15(30.0%) female compared with study done at Aga Khan Hospital which also shows that incidence of aplastic anemia is slightly higher in male patients then female study done in northern areas of Pakistan. The male to female ration is 2.8:1 observed. Our study also compare with study done by the department of hematology Arms Force Institute of Pathology Rawlpindi Pakistan 1998. It shows that 20 suspected cases of aplstic anemia. All cases were graded into severe aplastic anemia. All cases were graded into evere aplstic anemia, very severe aplastic anemia non-sevee aplastic anemia according to cammita's criteria. There were 11 (55%) cases severe aplastic anemia. 2(10%) cases of very severe aplastic anemia and 7(35%) cases of non-severe aplastic anemia.

DISCUSSION:
Aplastic anemia is a rear but serious problem with a high morbidity and mortality rate[12]. Evidence for a higher rate of AA in Asian countries that in the West has come from diverse sources, not all of equal reliability, and formal epidemiologic studies have been undertaken only recently. The International Agranulocytosis and Aplastic Anemia Study (IAAAS) established a widely accepted annula incidence of 2 per million for Europe and Israel[13], similar figures were obtained elsewhere in Europe [14-16]. Aplastic anemia is thought to be more common in Asia than in the West. The incidence was determined 4 cases per million population in the rural areas of Thailand and as high 14 cases per million population in Japan. The male to female ratio in acquired aplastic anemia is approximately 1:1, although some data suggest that a male preponderance may exist in the Far East.
In our study aplastic anemia was seen mainly in the young adult male more than females. The male to female ratio was 2.8:1 observed in our study is also at variance with reports from west and Far East. We could not establish an etiological correlation with environmental factors.
Hepatitis associated aplastic anemia typically occurs within six months of an acute attack of hepatitis in our patients who were detected to have viruses associated hepatitis 05 cases of hepatitis C positive associated aplastic anemia were detected. Studies form Taiwan and Thailand also reveal a high incidence of hepatitis associated aplastic anemia. There are few limitations of this study. There was lack of availability of cytogenetic data and bone marrow transplantation thereapy at Liaquat University Hospital Jamshoro.

CONCLUSION:
Aplastic anemia is a commonly seen more in males as compared to females and severe aplastic anemia is most common among both male and females. Aplastic anemia is the important cause of morbidity and the mortality and is also associated with hepatitis. More studies on large scale in our region are needed to find out the demographic distribution, causes and type of aplastic anemia prevalent in the region.

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