Original Research Article

Study of prevalence of Aplastic anaemia in Punjab Population

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Abstract

Background: Aplastic Anaemia is a rare yet a life threatening haematological disorder. Untreated AA results in very high mortality, Early diagnose of AA is essential for appropriate management. **Method:** Out of 550 adult patients aged between 18 to 40 years were studied among them 48 (8.7%) were positive with AA. Hb%, CBC, Bone marrow aspirate and trephines biopsy test, LFT confirmed the AA. To rule out inherited AA peripheral blood lymphocyte was tested for Mitomycin C test, radiologically chest x-ray was taken to rule out infection, USG to find out splenomegaly, lymph mode enlargements and anatomical displacement of Kidney which is a feature of Fanconi Anaemia. **Results:** Habits and profession of AA patients were tobacco usage alcoholic, exposure to pesticides, Drugs (Medication), exposure to radiation. The clinical features were pallor with bleeding, exposure to chemotherapy. Benzene, hepatitis, TB, congenital / inherited. Pregnancy related infections, vaginal bleeding. **Conclusion:** This pragmatic approach to AA will be useful for physician to diagnose and treat the patients efficiently to prevent the future risk of mortality and morbidly, although aetiology of AA yet to be known.

Keywords: Bone marrow aspiration, Trephine biopsy test, MMC, splenomegaly, platelet count.

Introduction

Aplastic Anaemia (AA) is a rare haematological disorder in which there is a failure of the stem a cells to generate mature cells. The disorder is usually acquired and idiopathic or due to some underlying cause as drugs or pesticide[1]. A few cases are inherited the exact incidence of AA is not known. It is reported that, 2.34 cases per million/year[2]. From its initial description in late Nineteenth century, AA is observed in young persons: Its sporadic occurrence and devasting consequences. Secondly bone marrow failure in early age, its history was linked to environmental exposures. Its patho physiology based on several decades of laboratory and clinical observations[3]. Most AA appears to be secondary to immunological destruction of haemopoietic cells. The relation of AA is also associated to specific occupations[4]. There is a risk of development of autoimmune diseases has been linked to host genetics. Hence AA patients of both sexes, having different occupations have been evaluated to rule out the aetiology.

Material and Method

550 patients aged between 18 to 40 years having anaemia were studied.

Inclusive Criteria

Patients pancytopenias in the absence of hepato-splenomegaly were selected for study.

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Exclusion Criteria

Patients having anaemia associated with splenomegaly were excluded from the study.

Method

Out 550 anaemic patients 48 (8.7%) were confirmed as aplastic anaemia. The most common clinical features was pallor, bleeding manifestation as Hb<6mg/dl, platelet count<$50x10^9$/L. Neutrophillic count <$1.5x10^9$/L. Bone marrow aspirate and trephines biopsy test, LFT confirmed Aplastic Anaemia (AA). To rule out inherited AA peripheral blood lymphocytes tested for Mitomycin C (MMC), induced chromosomal breakage (stress cytogenetic). Radiological investigation of chest x-ray to rule out infection, USG abdomen to find out enlarged spleen, lymph node and anatomical displacement of kidneys which is a feature of Fanconi anaemia.
The Duration of study was January-2019 to January-2021.

Statistical analysis

Various clinical features and profession associated with AA patients were classified with percentage. The statistical data was calculated in SPSS software. Out of 48 AA patients 35 were males and 13 were females.

Observation and Results

Table-1: Profession (occupation) of AA patients – 15 (31.2%) tobacco users (tobacco chewing and smokers), 12 (25%) were alcoholic, 7 (14.5%) exposure to pesticides as they were farmers or sellers of pesticides 9 (18.7%) patients regularly taking chlorompenicol, sulphonamides, phenylbutozone, indomethacin, diclofenac, Naproxen. Phenytoin, carbomezapine and phenothiazines, 5 (10.4%) in radiation industry

Table – 1 Habits and occupation of AA patients

Sl No	Particulars	No. of patients (48)	Percentage (%)
1	Tobacco usage chewing smoking	15	31.2
2	Alcohol	12	25
3	Exposure to pesticides (farmers)	7	14.5
4	Drugs (Medications)	6	18.7
5	Radiation Exposure (working in Industry)	5	10.4

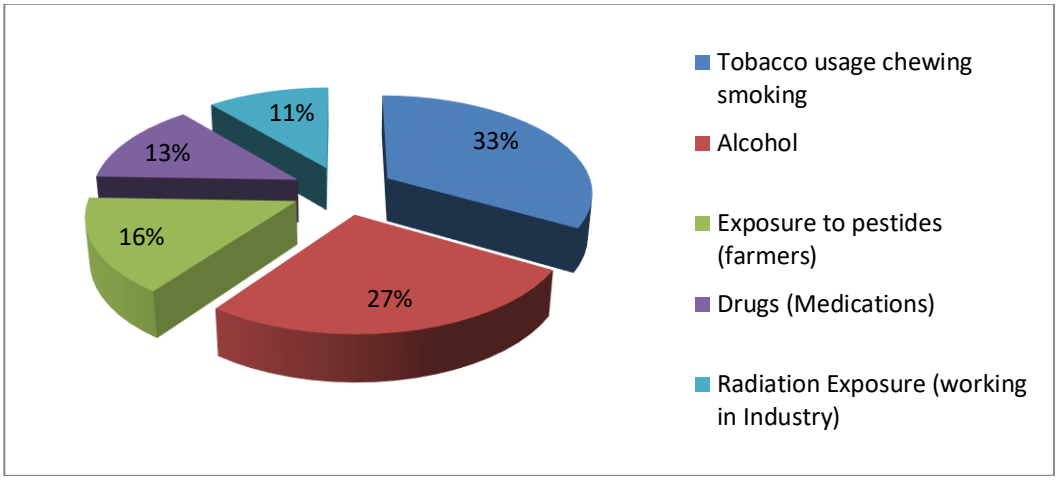

Fig 1:Habits and occupation of AA patients

Table-2: 10 (20.8%) pallor with bleeding, 10 (20.8%) exposure to chemotherapy, radiation and Benzene, 5 (10.4%) hepatitis, 5 (10.4%) tuberculosis, 5 (10.4%) had congenital AA, 13 (27%) females due to pregnancy related infections and vaginal bleeding.

Table 2: Clinical features of Aplastic Anaemia in both sexes

Sex	Manifestations	No. of Patients (48)	Percentage %
Male	Pallor with Bleeding	10	20.8
	Exposure to chemotherapy Radiation	10	20.8
	Benzene	5	10.4
	Hepatitis	5	10.4
	Tuberculosis	5	10.4
	Congenital	5	10.4
Female	Pregnancy Related infection and vaginal bleeding	13	27.0

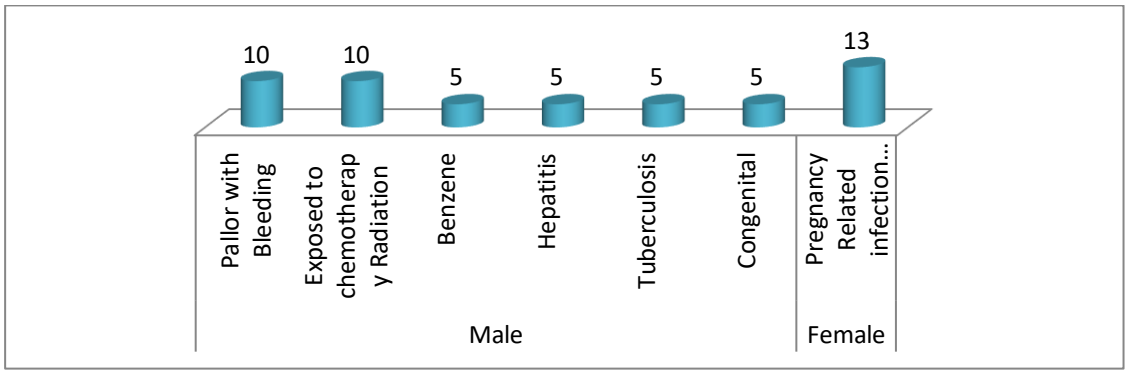

Fig 2:Clinical features of Aplastic Anaemia in both sexes

Discussion

The present study of prevalence AA in Punjab population out of 550 patients 48 (8.7%) were confirmed as AA. Habits and occupation of AA was 15 (31.2%) Tobacco chewers and smokers, 12 (25%) were alcoholic, 7 (14.5%) expose to pesticides, 9 (18.7%) were on medications, 5 (10.4%) expose to radiation (Table-1). The clinical features of AA was 10 (20.8%) had pallor with bleeding, 10 (20.8%) exposed to chemotherapy, radiations, Benzene, 5 (10.4%) hepatitis, 5 (10.4%) TB, 5 (10.4%) congenital / inherited, 13 (27%) pregnancy related infections and vaginal bleeding (Table-2). These findings are more or less in agreement with previous studies[5,6,7].

The severity of disease based on the presenting blood cell counts and marrow cellularity[8], but tempo of the disease varies with many patients presenting with mild chronic cytopenia while others with

prevalence of AA is around 2-3 million in western countries[9]. But the prevalence is still higher in Asian population than western and highest incidence was observed in Thailand[10]. Moreover disorder of telomere called idiopathic AA, but environmental factors can trigger the immune response against haemopoietic stem cells[11].

Although treatment options available are (a) Haemopoitic stem cells transplantation (b) Cyclosporine (c) Therapy with anti-lymphocyte (ALG) and anti-thrombolytic (ATG), immunoglobulin (d) Androgens and Danzol. Apart from this availability of treatment the factors which aggravate the AA are self medication (Usage of NSAID, anti-rheumatic drugs, antibiotics such as chlorompenicol, sulphonamides, linezolid etc. Diuretics, anti-convulsants i.e., phenytoins, carbamazapine and valapari acid) Use of non-medical needle, non-bottled water, exposure to agriculture professionals are infected. Moreover AA can follow specific viral infections which results into foetal disease such as post-sero-negative hepatitis, post-hepatitis AA, bleeding disorders like epistaxis, bleeding gums, vaginal bleeding. Complicated pregnancies are due to pelvic inflammatory disease. AA is quite obvious in young adults of both sexes. In addition to this congenital anomalies, inheritance of AA must be taken into account.

Summary and Conclusion

The present study of prevalence of AA will be quite helpful for physician to treat such patients meticulously to avoid fatal complications but this study demands further genetic, nutritional, environmental, patho-physiological, cytological studies because exact pathogenesis of AA is still un-clear.

- This research paper was approved by ethical committee of Adesh Institute of Medical Sciences and research Institute Bathinda-151001, Punjab.

Conflict of Interest: Nil Source of support: Nil

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