International Journal of Research and Review
Vol.7; Issue: 2; February 2020
Website: www.ijrrjournal.com
Original Research Article *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Prevalence of Hypoproliferative Anemia and Associated Risk Factors in Rajasthan: A Hospital Based Observational Study

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ABSTRACT

Background- Anaemia is a common condition, especially in children, young women and in the geriatric population, and is a major public health problem in developing countries. The aim of this study was to evaluate the prevalence of hypoproliferative anaemia and associated risk factors in population residing in Rajasthan State of western India. Iron deficiency is the most frequent cause of anaemia, closely followed by anaemia of chronic disease. [1]
Methods- It is a Hospital Based Observational Study, All cases of Hypo proliferative anaemia >18 year of age was attended in OPD and admitted in wards of Mahatma Gandhi Medical College & Hospital from January 2018 to June 2019. Study was done to estimate the prevalence of hypoproliferative anaemia and it's risk factor.
Result- Our study shows that anaemia is more prevalent in rural population and lower socioeconomic status. Hypo proliferative anaemia includes wide range of anaemias except haemolytic anaemia. Among hypo proliferative anaemias, nutritional anaemia is the most common followed by anaemia of chronic diseases. Most common nutritional deficiency is iron deficiency in our study, followed by vitamin B12.

Keywords: Hypoproliferative anaemia, prevalence, risk factors

1. INTRODUCTION-

Anaemia is a common condition, especially in children, young women and in the geriatric population, and is a major public health problem in developing countries. Iron deficiency is the most frequent cause of anaemia, closely followed by anaemia of chronic disease. [2]
Anaemia might result from various causes in which iron deficiency is being the most important contributor. But the proportion probably varies among population groups and in different areas, according to the local conditions.
The aim of this study was to evaluate the prevalence of hypoproliferative anaemia and associated risk factors in population residing in Rajasthan State of western India.

2. Aims And Objectives-

1.To study the prevalence of different types of Hypo proliferative anaemia
2.To assess the risk factors of different types of Hypo proliferative anaemia.

3. MATERIAL AND METHODS

Source of data : All cases of Hypo proliferative anaemia >18 year of age was attended in OPD and admitted in wards of Mahatma Gandhi Medical College & Hospital from January 2018 to June 2019
Type of Study: A Hospital Based Observational Study
Period of Study: 1.5 years
Size of Samples: 250 cases with aged 18 years and above with Anaemia attended in medical OPD and admitted in medical wards

- Institute Ethics Committee approval was obtained before start of study.

- Written and inform consent was obtained from all participants before enrolment into the study

Inclusion criteria:

- Patients belonging to the age group above 18 years presenting with hypo proliferative Anaemia were included in the study group.
- Patients willing with informed consent.

Exclusion criteria:

- All Patients below 18 years of age.
- All cases of hemolytic anaemia
- Patients who refused to undergone study trial.

Statistical analysis:

- The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program. Descriptive statistics included computation of percentages, means and standard deviations. The data were checked for normality before statistical analysis using Shapiro–Wilk test. Chi-square test and fisher exact test were used for qualitative data whenever two or more than two groups were used to compare. Level of significance was set at $P \leq 0.05$.

4. RESULTS

Table 1: Gender distribution among the study subjects

Gender	N	%	Male to female ratio
Male	117	46.8	1:1.3
Female	133	53.2	
Total	250	100.0	

Table 2: Residency and diet

	Veg	Non veg	Total
Rural	121(75.6%)	39(24.4%)	160(64%)
Urban	35(38.8%)	55(61.2%)	90(36%)
Total	156(62.4%)	94(37.6%)	250

*P value=0.001 (S)

Nonveg diet was more among urban subjects (55) whereas veg diet was more in rural subjects (121) as shown in table 2.

Table 3: Hb according to diet

Hb	Veg		Non veg		Total
	N	%	N	%	
<5	51	68	24	32	75
5-8	70	63.6	40	36.4	110
>8	35	53.8	30	46.2	65
	156		94		

*P value=0.03 (S)

In the present study, Hb<5 was reported in 33.01% and 15.91% of the subjects having veg and nonveg diet respectively whereas Hb 5-8 was found approximately same among the veg and nonveg subjects and Hb >8 was reported in 23.30% & 38.64% of the subjects having veg and nonveg diet respectively.

Table 4: Anaemia according to diet

Type of Anaemia	Veg		Non veg		Total
	N	%	N	%	
Iron Deficiency anaemia	74	47.4	56	59.6	130
Megaloblastic anaemia	64	41	33	35.1	97
Dimorphic anaemia	18	11.6	5	5.3	23
Total	156	62.4	94	37.6	250

*P value=0.03 (S)

Iron deficiency (47.4%), megaloblastic anaemia (64%) and dimorphic anaemia (11.6%) was found among vegetarian subjects while in non vegetarian subjects Iron deficiency (59.6%), megaloblastic anaemia (35.1%) and dimorphic anaemia (5.3%).

5. DISCUSSION

Anaemia, defined as a low blood Hb concentration, has been shown to be a public health problem that affects low-, middle- and high-income countries and has significant adverse health problems, as well as adverse impacts on social and economic development of society. Hypo-proliferative anaemia is an anaemia where the production of reticulocytes, is absolutely low, or low for the degree of anaemia (Reticulocytopenia-Reticulocytes production index is <2.5%). The aim of this study was to evaluate the prevalence of hypo-proliferative anaemia and associated risk factors in Rajasthan Population, state of Western India.

The present study comprised of 250 subjects, out of which 46.8% and 53.2% were males and females respectively. The male to female ratio was 1:1.3 in the present study. Dasharatham P et al [1] in their study revealed that female preponderance ratio was 3:2. Authors found that females were more commonly affected than men. The male to female ratio was 1:1.6.

In the present study, maximum subjects were in the age group of 21-30 years (35.6%), followed by 18-20 years (20.4%) and 31-40 years (14%). Kochar A et al [3] in their study showed that the majority of cases (70%) were seen in 20-25 years of age group. Authors found that majority i.e. 26% of the patients with severe Anaemia belonged to the age group of 20-29years. But in a study done by Kumar S et al, the most common affected age group was 0-20years. [4] This difference in the observation among the two studies may be due to the fact that the present study has taken patients of severe Anaemia only above the age of 18years.

In the present study, poor socio economic status income <10k was found in 26.8% of the subjects whereas >40k income was reported in only 10.4% of the subjects. Kochar A et al [2] in their study showed that lower and middle-class socioeconomic status was most commonly present which reside the rural area, only 36% cases.

In the present study, 64% and 36% of the subjects were living in rural and urban area respectively. Yadav J et al [5] in their study showed that the prevalence of mild anaemia were higher (18.6%) in rural area as compared to their counterpart urban area (13.3%). The present study revealed that the prevalence of severe anaemia was higher (5.7%) in rural area as compared to their counterpart urban area (3.7%). Adamu AL et al [6] reported that across all subgroups, the proportion of microcytosis increased with severity of anaemia. Microcytic Anaemia was higher with all levels of Anaemia among urban residents, while macrocytic Anaemia was more prevalent among men and rural residents.

In the present study, vegetarian (62.4%) were higher as compared to non-vegetarian (37.6%) anaemic patients. It showed that vegetarian diet may have nutritional deficiency to develop anaemia like iron deficiency (47.4%), megaloblastic (41%) and dimorphic (11.6%) anaemia. In vegetarian diet iron deficiency anaemia showed slightly more as compared megaloblastic anaemia. Whereas non-vegetarian diet iron deficiency (59.6%) is more common anaemia as compared to megaloblastic anaemia (35.1%).

Vegetarian diet showed more predictivity as compared to non-vegetarian diet in moderate to severe anaemia. While mild anaemia showed almost same results in both vegetarian diet (53.8%) and non-vegetarian diet (46.2%)

6. Summary

A hospital based observational study done in hypo proliferative anaemia >18 year of age were attended in OPD and admitted in wards of Mahatma Gandhi Medical College & Hospital from Jan. 2018 to June 2019. During study period total 250 cases were taken as final sample size in our study. period total 250 cases were taken as final sample size in our study.

- Male to female ratio is 1:1.3.
- Maximum subjects were in the age group of 21-30 years (35.6%), followed by 18-20 years (20.4%).
- Twice of subjects were living in rural areas (64%) as compared to urban areas (36%).
- Two third of patients (74.4%) belong to low and middle socioeconomic status.
- Twice of subjects were having vegetarian diet (62.4%). Overall iron deficiency anaemia is more common in both diet while megaloblastic anaemia more in vegetarian diet as compared to non-vegetarian diet.

7. CONCLUSION

Our study shows that anaemia is more prevalent in rural population and lower socioeconomic status. Hypo proliferative anaemia includes wide range of anaemias except haemolytic anaemia. Among hypo proliferative anaemias, nutritional anaemia is the most common followed by anaemia of chronic diseases. Most common nutritional deficiency is iron deficiency in our study, followed by vitamin B12.

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How to cite this article: Budaniya PP, Jat RK, Bansal DP et.al. Prevalence of hypoproliferative anemia and associated risk factors in Rajasthan: a hospital based observational study. International Journal of Research and Review. 2020; 7(2): 18-21.

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