International Journal of Pharmaceutical Research and Applications
Volume 8, Issue 5 Sep-Oct 2023, pp: 1391-1395www.ijprajournal.com ISSN: 2249-7781

Studies on the prevalence and counselling of sickle cell anaemia in the Northeast region of Nanded district of Marathwada. (MS, India)

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Submitted: 20-10-2023 Accepted: 30-10-2023

ABSTRACT
Sickle cell is a genetic disease that occurs in the human population, especially in the tropical region of the world. In sickle cell disease, the haemoglobin gene is affected, which ultimately changes the shape of red blood cells and results in the death of the affected individuals. In Maharashtra, the prevalence of sickle cell disease occurs in the north east region of Maharashtra, in this study, we selected the north east region of the Nanded region and detected the prevalence of sickle cell disease. Our finds showed that the sickle cell disease is found more among the Banjara community, next to the Schedule tribe and schedule cast. The population living in this area has the highest rainfall and highest density of the mosquito population. This study revealed that the Careers are the key factor for the transmission of the disease. we focused on the marriage among carrier of sickle cell disease trait and non-sickle trait individual, we guided the carries regarding the transmission of trait, after the counselling the rate of transmission falls below 0.1% and hence the of sickle cell disease is decrease in this region.

Key words: Sickle cell anaemia, Prevalence, Haemoglobin, trait, Genetic disease.

I. INTRODUCTION

Sickle cell disease (SCD) or sickle cell anaemia (SCA) or Drepanocytosis, is an autosomal recessive genetic disorder of the chromosome 11 of humans which is determine the production of haemoglobin in RBC. Defective haemoglobin results intochanges the shape of red blood corpuscle like sickle. sickling occurs because of a point mutation in haemoglobin protein. The sickling of cell decreases the cell flexibility and results in a risk of various complications. sickle cell anaemia occurs more commonly among people who living in tropical and subtropical region where malaria is or was common. In area where the malaria occurs, natural selection favours by point mutation in haemoglobin gene, toprovides benefit to the heterozygous sickle cell trait. carrier is to resistance to malaria. in sickle cell heterozygous carriers' malaria parasite could not grow and the cell affected by parasite will easily be filtered out through kidney and sickle cell carrier remain healthy.The homozygous of sickle cell anaemia patient has very shorten of the life span and leads to death of newborn and ultimately led to the reduction of population of the tribes.

The highest frequency of SCD is found in tropical region, particularlysub-Saharan,Africa,India and middle east. The total frequency of SCD among globe is about 10 to 30 percent.

In Maharashtra the prevalence of SCD is recorded as 9 lakh carrier and 4500 sufferers(NRHM). Nandurbar and Gadchiroli district of Maharashtra are the sickle cell prone area. In the present investigation,we select the Nanded north east region because this area has recorded highest malaria casesamong the tribunal community, and malaria is co-prevalent with sickle cell disease.

II. MATERIAL AND METHOD.

2.1 .Method for screening includes

a) Testing camp – people from malaria prone are requested to attain the health camp of unmarried, married and infant between agegroup between 5 years to 45 years,
b) Visted to three talukas from North east region of Nanded district speciallyHimayat Nagar, Mahur andkinwat.
c) Questionary was made on the basis of symptoms of malaria and other complication,

2.2.collection of blood and microscopic examination of blood sample using following method. If the

a) Determination of total count of red blood cell

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total red blood cell was count by using hemacytometer and total cell were counted.
b) Total blood cell count
Automaticcoltercounter used for total blood cell count

C) Blood smear observation(forsickling test)

When red blood cell contain HB S are deprived of oxygen, they become Sickle-shaped, reducing agent that is used to remove oxygen from the red blood cell is 2% sodium met sulphite

A drop of capillary of anticoagulant venous blood is mixed on a glass slide with drop of 2 % sodium met sulphite andcover slip is placed over the mixture and sealed with petroleum jelly-paraffin wax. The preparation examined under the microscopic after 30 minutes, if sickle cellis not seen, examine the slide again after 2 hour, and 24 hours. The test is reportedis negative if the red cell remains round, and positive ifcell observed as sickle shaped.

False negativetest can occur if the reagent is outdated or not freshlyprepared, concentration of Hb S is low (in infant below 6 month following recent blood transfusion.) or if there is severe anaemia
False- positive test can occur if the concentration of sodium met sulphiteis excessive or if there is drying of the wet preparation.

D) Arrangement of counselling camp to sickle cell positive patient and distribution of folic acid and multivitamin supplements and syrup to them under the supervision of health care provider.

III. OBSERVATION AND RESULT

Awareness camp was organised through NGO organization (Lionsclub) andexpert of haematology was called for consoling of the people; camp was held at KothaTanda in Himyatnagartahshil.

Total 15 village belonging to banjaracommunity,were selected and total 256 blood sample werecollected only from the suspectedpatient in a blood collecting tubes. Blood sample from children age above5 andunmarried and married couple below 45 years. All sample werekept separately and labelled. The result showed that total 24 patient with carrier sickle cell were found positive among these 5 children found homozygous and all other found heterozygous are male and female. aftercounsellingcamp,the reduction of homozygousinfantoccurs to zero and heterozygous infect is one.Table 1. Showed the village wise data of the test positive patient. The data of analysis represented in the graph 1 and the reduction of sickle cell disease after counselling shown in graph 2

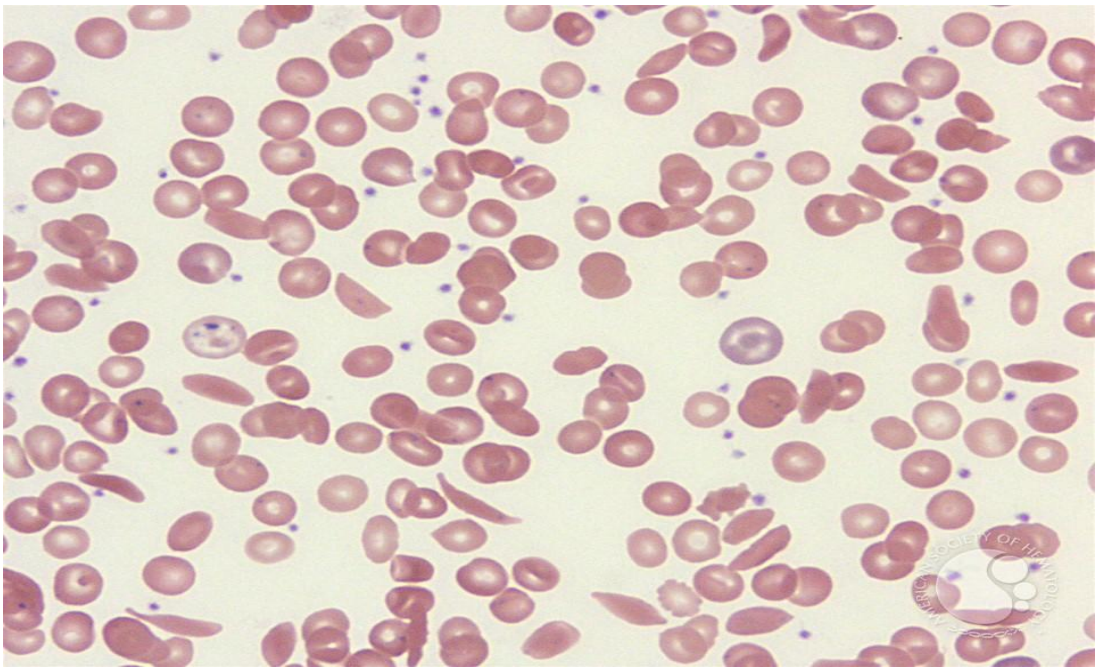

Fig: Microscopic observation of sickle cell(provided by DB chavan Micro laboratory ACS College

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Sr No	Name of the village	Total symptomatic patient	M	F	C	Positive sickling test	Homozygous	Heterozygous carrier
1	Borgadi	09	9	2	2	1	-	1
2	Kota	19	2	14		1	-	1
3	Takrala	10	3	6	1	1	-	1
4	kandali	10	3	5	2	-	-	-
5	wanola	15	5	7	3	1	1	-
6	Gokul	17	4	10		1	1	1
7	Kothari	20	05	15	5	4	2	2
8	Shingod	16	6	8	2	3	-	3
9	devla	20	7	10	3	4	1	3
10	madvi	30	7	20	3	5	-	5
11	Talari	20	4	12	4	1	-	1
12	Nandgo	15	6	6	2	1	-	1
13	paroti	25	5	16	4	-	-	-
14	Daheli	20	4	15	1	1	-	
15	Ritha	10	5	4	1	1	-	1

M= male, F= Female= Child

table 1. screening of blood for detection of sickle cell disease

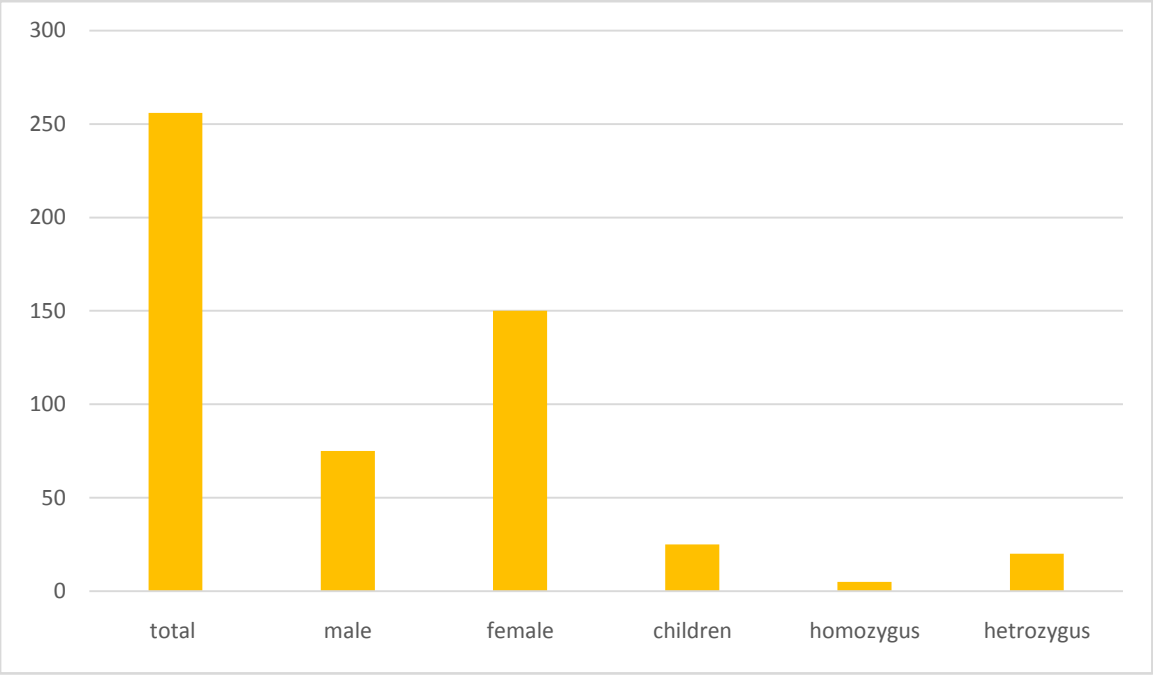

Table 2.data showing result after the mirage between carrier with non-sickle trait

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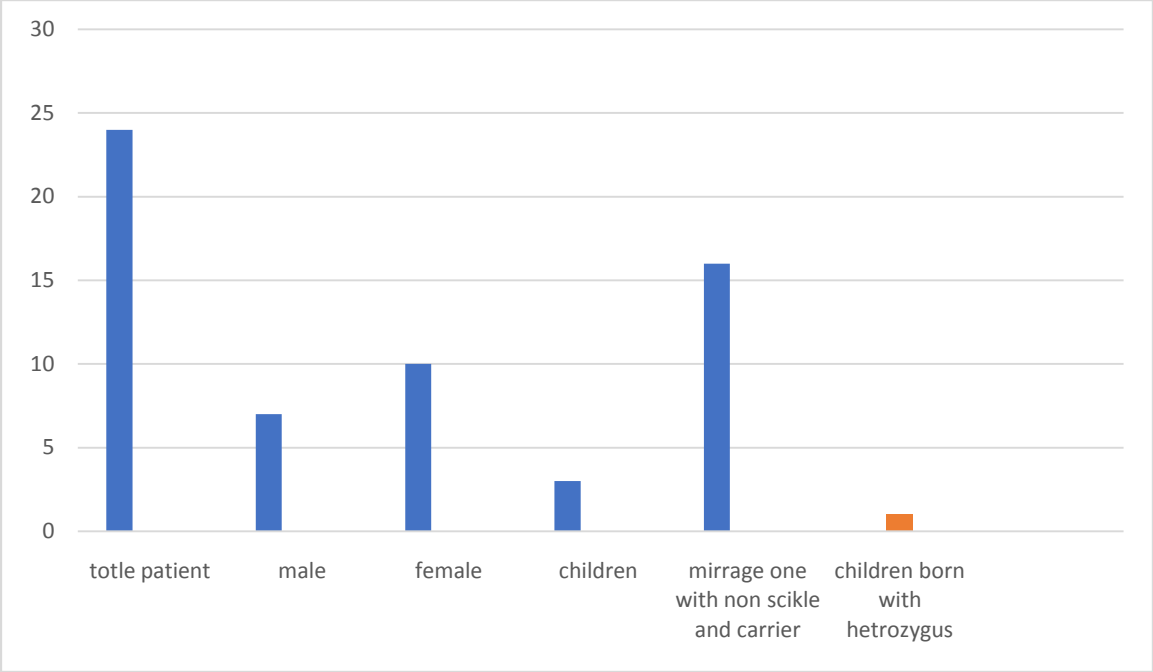

IV. DISCUSSION

Sickle cell anaemia is a genetic disease and occurs among the tribunal communities all over the word. The gene of haemoglobin protein get mutated inwhich the amino acid at 6 position(glutamine)is replaced with valine. This point mutation in haemoglobin leads to change the shape red cell to sickle shape. This disease revels in tribunal community in India. Vinod Sutaone(2013) reported the prevalence of sickle cell anaemia in north east region of Nanded region. Health Department of Maharashtra has (2021) reported that sickle cell trait is about 2.10 lakh found among these Vidhabra region and recorded the highest cases. The North east region of Nanded is in closed proximity with the Vidhabhara. In this study, samples were selected from the reported area, SarikaGawandeet,al(2013) reported the sickle cell disease among the Schedule cast, schedule cast and other , in their study sickle cell trait reported more among the Schedule cast and low in the schedule tribes. No study was reported about the Banjaracommunity, this community located in hilly area and do not aware about sickle cell disease, no government data is available about the status of sickle cell trait of this community, hence in this study, this oppressed community was selected for the prevalence of sickle cell trait, this study first time reported the sickle cell trait among this community. 5 children were detected homozygous and all were died due to lack of the knowledge about this disease.in this study the counselling camp before and after the study improved the status of the disease. With the counselling community agreed to marriage between heterozygous and non-sickle cell trait individual. In this study only one heterozygous child is detected the frequency of homozygous is reduced to zero.

V. CONCLUSION

This study was carried between June 2019 to March 2022. Sickle cell disease is prevalent in Maharashtra,this disease occurs due to point mutationinhaemoglobin genes. sickle cell isdisease transfer in Mendelianfashion.in densely forest area malaria parasite is prevalent. The populationis naturally evolving to cope with malaria by natural selection.Homozygous of sickle cell carrier do not have longer life span, hence, in this study the homozygous trait is selectively reduced in selected are of Banjara community.

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