I J R B A T, Issue (Special-17), June 2021: 525-528 e-ISSN 2347 – 517X
A Double-Blind Peer Reviewed & Refereed Journal Original Article
INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY

INVESTIGATIVE REPORT ON SICKLE CELL ANEMIA FROM SAKRI TEHSIL

L. B. Pawar and P. P. Rathod
S.G. Patil Arts, Science & Commerce College, Sakri Dist. Dhule 424304
Email: lahupawar2322@gmail.com

ABSTRACT:
Sickle cell Disease (SCD) is a group of genetic disease commonly seen in United States and three countries of the world. The term *disease* is applied to this condition because the inherited abnormality causes a pathological condition in which red blood cells becomes sickle shaped. In Maharashtra, the sickle gene is widespread in all the eastern districts, also known as the Sakri region, in the Satpura ranges in the west and in some parts of Khandesh. The prevalence of sickle cell carriers in different tribes varies from 0 to 35 percent. The tribal groups with a high prevalence of HbS (20-35 %) include the *Bhils*, *Madias*, *Pawaras*, *Pardhans* and *Otkars*. In present study from Sakri tehsil of Dhule district there are 39.6% in male and 60.3% in female sickle cell anemic patients found and its ratio was 94.8% in ST category and 14.6% in other categories found

INTRODUCTION:

Sickle cell disorder is a group of diseases caused by a point mutation at sixth position in beta globin chain, valise substituting glutamic acid due to which in deoxygenated state, shape of erythrocytes change to sickle shape and also the fragility of cell member acne increase . In India, it is more common in central and southern parts of the country it is the second most common hemoglobin apathy. Next to thalassemia in India in 1952, Lehman and catbush reported the presence of the disease in India among the tribal of Nigeria hills for the 1st time. This was largely because most of the subsequent reports spread a misconception that the sickle gene in India was confined to the tribal population are some scheduled caste only.

The sickle gene is widespread among many tribal population groups in India with prevalence of heterozygotes varying from 1-40 per cent. Co-inheritance of the sickle gene with β-thalassaemia, HbD Punjab and glucose-6-phosphate dehydrogenase (G6PD) deficiency has also been reported. Most of the screening programmes in India now use high performance liquid chromatography (HPLC) analysis although the solubility test is also sensitive and cheap. Sickle cell disease (SCD) among tribal populations is generally milder than among non-tribal groups with fewer episodes of painful crises, infections, acute chest syndrome and need for hospitalization. (Roshan B. et al., 2015)

Sickle cell disease (SCD) is a very devastating condition caused by an autosomal recessive inherited haemoglobinopathy. This disease affects millions of peoples globally which results in serious complications due to vasoocclusive phenomenon and haemolysis. This genetic abnormality is due to substitution of amino acid valine for the glutamic acid at the sixth position of beta chain of haemoglobin. This disease was described about one hundred year ago. The haemoglobin S (hbS) produced as result of this defect is

poorly soluble and polymerized when deoxygenated. Symptoms of sickle cell disease are due to chronic anaemia, pain full crises, acute chest syndrome, stroke and susceptibility to bacterial infection. In recent years measures like prenatal screening, better medical care, parent education, immunization and penicillin prophylaxis have successfully reduced morbidity and mortality and have increased tremendously life expectancy of affected individuals. (KAUR M et al. 2013).

Sickle cell disease is a major genetic disorder amongst Scheduled Caste (SC), Scheduled Tribe (ST), and Other Backward Communities (OBC) population groups of Maharashtra. We modified diagnosis technique and developed simple laboratory technology to identify carrier (Hb SS) and sufferer (Hb AS) suitable for field work. In order to find out prevalence for sickle cell disorder we screened major communities from the state and found high prevalence amongst SC, ST and OBC. The overall prevalence amongst SC, ST and OBC is 10%. Severe joint pains and milder type of jaundice are peculiar symptoms amongst sicklers from the state of Maharashtra. (S. L. Kate and D. P. Lingojwar 2002).

Chances are that you might not have heard much about Sickle Cell Disease ("SCD") lately. That doesn't mean that it has gone away. It certainly hasn't. SCD is still negatively impacting the lives of millions of people worldwide. There are as many as 150,000 babies born with the disease each year in Nigeria, alone. Gary A. Gibson 2011

MATERIAL AND METHODS:

Study area- Study was conducted in rural area of Sakri tehsil from Jan. 2018 to Dec. 2018. The villages from Sakri tehsil were selected by proportional randomization.

The population was screened by holding camps in each village at evening time as village people are available in the evening time only after 6.00 pm. The population was screened by dithionite tube test CDTT or solidity test.

Dithionite tube turbidity test -

1. Few drops of blood were collected by pricking ring finger and added to glass tube containing sodium citrate in normal saline solution.
2. After mixing, it was centrifuged for 2 to 3 min. at 3000 rpm.
3. 1ml of phosphate buffer reagent was taken in a glass tube.
4. A small quantity of sodium dithionite was added to it and was mixed well to dissolve.
5. A small drop washed red cell of blood is added and was mixed well to produce light pinkish colour.

RESULT, DISCUSSION AND CONCLUSION:

In present study, solubility (DTT) test was used as a screening test as it is a rapid method and easy to be carried out in the field setting, used by ICMR network on sickle cell disorder coordinated by Institute of Immunohematology. The prevalence of disorder was more in age group of 10-20 yrs.

As per data of Govt. rural hospital, Sakri electrophoresis test report shows,

Total test – 116 patients 1 Normal patient – 15 - 12.9% 2 Sickle cell trait – 94 - 81% 3 Sickle cell disease – 7 - 6%

Sex wise percentage 1 Female patient – 39.6% 2 Male patient – 60.3%

Caste wise patient 1 ST category – 84.8% 2. OBC category - 14.6%

Age wise percentage the percentage of disease was more in 10-20 yrs. And minimum in age group 31-50

The sex wise prevalence was 39.6% in male and 60.3 % in female. The maximum prevalence was found in ST category people i.e. 94.8% and in OBC category people was 14.6% respectively. The electrophoresis pattern revealed that 81.0% were sickle cell traits and 6.0% were sickle cell anemic as well as 12.9% is normal.

REFERENCE :

Gary A. Gibson., Sickle Cell Disease: Still Here and Still Causing Pain., Martin Center., 2011, 1-19

Kaur M, Dangi Cbs & Singh M., An Overview On Sickle Cell Disease Profile., *Asian J Pharm Clin Res, Vol 6, Suppl 1., 2013, 25-37*

Roshan B. Colah, Malay B. Mukherjee, Snehal Martin & Kanjaksha Ghosh., Sickle cell disease in tribal populations in India., Indian J Med Res 141., 2015, 509-515

S. L. Kate and D. P. Lingojwar., Epidemiology of Sickle Cell Disorder in the State of Maharashtra., *Int J Hum Genet, 2(3), 2002, 161-167*

Sr. No.	Age	Gender			
		Male	%	Female	%
1	10-20	33	28.4	33	28.4
2	21-30	8	6.8	31	26.7
3	31-40	4	3.4	2	1.7
4	41-50	3	2.5	2	1.7

Normal Red Blood Cell

Sickle Cell