Incidence of Glucose-6-phosphate Dehydrogenase Deficiency and Correlation with Some Other Laboratory Findings among the Tibetan Refugees in Orissa

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INTRODUCTION

Deficiency of red cell glucose-6-phosphate dehydrogenase (G-6-PD.) is a genetically determined condition and has been responsible for drug-induced hemolytic anaemia in humans (BEUTLER, 1957). Such defect is present in considerable and varying frequencies in different regions (CHATTERJEA, 1966).

Wide variations in the incidence of the deficiency of G-6-PD. and sickle cell trait have been noted to occur in several populations at different parts of the world. Some attention has also been attracted by the possibility of these two traits influencing each other (LEWIS and HATHORN, 1965).

The purpose of this paper is to bring out up to date on the frequency distribution of such traits among the Tibetan refugees, since there is lacuna of various enzymatic deficiencies among them.

MATERIAL AND METHODS

The present survey was carried out among the Tibetan refugees at Chandragiri, Ganjam Dist., Orissa. The laboratory findings were correlated with age, sex, sickling and amount of haemoglobin also. Following laboratory investigations were done:—

- I). G-6-PD. by Capillary Method (KHER *et al.*, 1967).
- II). Sickling by using 2% sodium metabisulphite as reducing agent (WINTROBE, 1967).

III). Haemoglobin in gram % (SAHALIS method).

FINDINGS

Table 1. Incidence of G-6-PD. deficiency in different sexes.

Sex	No. of Cases	Positive Cases	Percentage
Male	166	6	3.6
Female	133	3	2.2
Total	299	9	2.9

Table 2. Relationship of sickling with G-6-PD. deficiency.

Type	Total No.	No. of G-6-PD. deficient	Percentage
Sickler	36	2	5.5
Non-sickler	263	7	2.6

Table 3. Relationship of G-6-PD. deficiency with sickling.

Type	Total No.	No. of sickler	Percentage
G-6-PD. deficient	9	2	22.3
Non-G-6-PD. deficient	290	34	11.5

Table 4. Amount of haemoglobin in the population and in G-6-PD. deficient cases.

Haemoglobin in grams	Out of total (299)	Out of G-6-PD. deficient(9)
7.5 to 9.0	96 (32.1%)	3 (33.3%)
9.1 to 10.5	93 (31.1%)	4 (44.4%)
10.6 to 12.0	76 (25.4%)	1 (11.1%)
12.1 to 13.5	33 (11.0%)	1 (11.1%)
Above 13.6	1 (0.33%)	0 (0.0%)

CONCLUSION

Out of randomly selected 299 Tibetans, only 9(2.9%) had G-6-PD. deficiency. It was higher in males than females and in children than in older individuals. But from the studies of GELPI (1965), HUSEYIN (1967) and OWUSU (1973) it is difficult to say whether the incidence varies in different sexes or not.

Sickling and G-6-PD. deficiency abnormalities were recorded, going hand in hand. Higher incidence of G-6-PD. deficiency in sicklers has also been reported by LEWIS (1967).

Among the Tibetans, below 12 grams haemoglobin was recorded in 88.6% whereas with G-6-PD. deficiency in 88.8%. So no significant difference in amount of haemoglobin in between normal and G-6-PD. deficient population was recorded.

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オリッサ在住チベット人亡命者におけるブドウ糖-6-リン酸
脱水素酵素欠乏の頻度及びその他の血液性状との相関

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インドのオリッサ州ガンジャム地区のチベット人亡命者299名のうち、わずか9名(2.9%)において glucose-6-phosphate dehydrogenase (G-6-PD.) 欠乏がみられた。G-6-PD. 欠乏の頻度は女性より男性で、成人より子供で高かったが、他の研究者の結果も参照すると、G-6-PD. 欠乏の頻度に性差があるかどうかは不明である。

赤血球の鎌状化を示す者の方が、示さない者に比較して G-6-PD. 欠乏の頻度は高かった。

チベット人の 88.6% はヘモグロビン量が 12g 以下で、それが G-6-PD. 欠乏者の 88.8% を占めた。従って、正常者と G-6-PD. 欠乏者の集団間にヘモグロビン量の有意な差は観察されなかった。