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LETTER TO THE EDITOR

# When ethnology informs clinical medicine: non-Bantu peoples without apparent sickle cell disease in the Mbulu area of Northern Tanzania

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A B S T R A C T

## Dear Editor

Sickle cell disease (SCD) is distributed throughout Eastern and Southern Africa, the Bantu subtype being more prevalent[1]. It is assumed that the whole population is at risk because the majority of the several hundred tribes are of Bantu origin[1,2].

However, in the Mbulu area, a rural and very remote region between Lake Eyasi and Lake Manyara in Northern Tanzania, three tribes of non-Bantu origin live among Bantu tribes[3-5] . The Southern Cushitic Iraqw (approximately 500 000 people), are subsistence farmers who probably migrated from Ethiopia several centuries ago[2,3]. The Southern Nilotic Datoga (100 000–200 000people) are nomadic pastoralists, probably of past centuries' Sudanese origin[2,4]. Although there has been inter-marriage between these two tribes, until recently they have rarely inter-married with Bantu tribes[3,4], thus they comprise a largely genetically homogenous group. Of the smallest group, the Khoisan Hadzabe (1000–1500 people) who are believed to be the original hunter-gatherers[5], virtually nothing is known of their health status[5].

The remaining tribes (Isanzu, Nyiramba, Iambi, Nyaturu and Sukuma) who belong to the Bantu family, are subsistence farmers or small-scale traders and represent the majority of the peoples in contemporary Sub-Saharan Africa[2].In the general patient population at Haydom Lutheran Hospital (HLH), a 400-bed church hospital and main health service provider in the Mbulu area, Iraqw and Datoga people

 

comprise over 75% of the patients (I . Malleyeck[HLH], unpubl data, 2009).

While children from the Bantu tribes present to the paediatric department of HLH with SCD, this has not been observed among non-Bantu tribes[6]. Therefore, a retrospective study was performed to assess whether laboratory results confirm the clinical impression of the influence of ethnic background among SCD paediatric presentations.

# Methods

The results of all sickling tests performed from 1 January 1998 to 31 December 1999 (collected during a study at the time of the author's clinical work at the hospital), were linked with the admission record of the ethnic background of the patients (children with clinical signs and symptoms suggestive of SCD). If the sickling test is positive, affected erythrocytes in a drop of blood show 'sickling' (a sickle-like shape) when deprived of oxygen; however, the test cannot distinguish between the heterozygous and homozygous type[7]. Due to the basic nature of the laboratory service in this resource-low service, only haemoglobin, haematocrit, the sickling test, blood grouping and cross-matching are possible. In this remote location, the cost and logistic restrictions mean more sophisticated testing (ie haemoglobin electrophoresis, confirmatory solubility testing or genetic studies) is not possible.

# Results

Out of 281 sickling tests, 64 were positive during the 24 month period and all of these were from patients of Bantu origin (98%) except for 3 children. Of these three children, two (aged 5 and 9 years) were found to have SCD although their fathers were said to be of Iraqw descent (the mothers were Bantu). However, after thorough history taking it was found that the genetic fathers were also of Bantu background. The third child (12 years) was of Datoga descent and, despite the positive sickling test, had no clinical features of SCD (haemoglobin >11 g/dL). Due to a multiethnic genetic heritage suggestive of Bantu intermarriage, this child was thought to be a heterozygous carrier.

# Discussion and Conclusion

To date, from among the HLH paediatric in- and out-patients, no child of pure Datoga or Iraqw origin has presented with the signs and symptoms of SCD and returned a subsequent positive sickling test. While the possibility that a few carriers of the sickle cell gene exist among these two peoples cannot be excluded (although with intermarriage the heterozygous gene frequency may soon increase considerably), at present, epidemiologically, such carriers would be so few that SCD is largely absent in these tribes. On the basis of this ethnological information, it is likely that sick, anaemic children from the Iraqw and Datoga tribes do not suffer from SCD. Thus, meagre technical, financial and human resources should be directed to patients of Bantu origin who are much more likely to present with the disease.

This clinical observation is substantiated by research findings from East Africa that the majority of SCD is found among those of Bantu descent[8-10] . Although a few reports have cited significant numbers of SCD patients among Nilotic and Cushitic peoples (who are related to the Datoga and Iraqw to varying degrees)[8-10] , it can be assumed that at the time of the Datoga and Iraqw migration from their original homelands, the *HbS* gene was not present in those populations.

This unique clinical opportunity was only due to the two tribes' cultural tradition against inter-marriage with neighbouring Bantu tribes, thus preserving genetic differences over the centuries[3,4].

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