Correspondence

Saudi newborn screening: a national public health program: needs, costs, and challenges

To the Editor

I read with interest the recent article by Afifi[1] on Saudi newborn screening – a national public health program, needs, costs and challenges. However, the authors limited themselves in the text on metabolic disorders. It would be of great help to have more insight for further planning of screening programs in Saudi Arabia if the authors had provided more information about other health problems. Sickle cell gene is common throughout the Kingdom of Saudi Arabia, affecting a large segment of the population and emerges as one of the major public health problems.[2] In view of the high frequency of the sickle cell gene, a research program was established at King Faisal University financed by King Abdulaziz City for Science and Technology. Cord blood samples were collected from babies born to Saudi mothers in the 3 major general hospitals in the area,[3] (King Fahad University Hospital, Khobar, Dammam Central Hospital, Qatif General Hospital). A total of 29246 eastern Saudi neonates were screened between February 1982 to April 1987 and sickle cell disease was diagnosed in 291 newborns.[4] Six phenotypes hemoglobin adult fetal (AF), AF hemoglobin barts (AFBarts), AF hemoglobin sickle (AFS), AFSBarts, FS, and FSBarts were commonly observed. It was found that: The incidents of sickle cell trait were approximately 27% in Qatif, 6% in Dammam and 5% in Al-Khobar areas of the eastern province of Saudi Arabia. The Alpha Thalassemia gene was present in approximately 50% of the cases and the interaction between sickle cell gene was commonly observed. In Saudi patients from the eastern regions, the incidence of sickle betathalessemia (SB) was 10%. In 81 neonates an abnormal hemoglobin other than sickle cell hemoglobin was detected during the screening program. It was observed that HbE which was highly prevalent in south eastern Asians was the second most prevalent hemoglobin variant present in eastern Saudi Arabia. The screening of the newborns with sickle cell disease for Glucose-6-phosphate dehydrogenase (G6PD) deficiency revealed a high incidence (50%) of this red cell enzyme abnormality in the region. In areas of high prevalence for the sickle cell gene, screening programs are being implemented in order to identify individuals with sickle cell disease and sickle cell trait so that appropriate counseling maybe offered and if necessary prophylactic and definitive therapeutic measures adapted. We recommend that screening of all newborns in areas of the Kingdom where sickle cell disease and red blood disorders have shown to be common. This approach will be more cost effective than funding small projects in different institutions.

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Reply from the Author

In response to Al-Awamy's "Correspondence" on our paper,[1] we would like to clarify that our recommendations cover a wide area of potential disorders in Saudi Newborn Screening as stated clearly that; "Ideally, all newborns should be screened for all disorders for which effective treatment is available. These disorders can be grouped into 5 categories: Amino acid metabolism disorders, organic acid metabolism disorders, fatty acid oxidation disorders, hemoglobinopathies, and others (namely congenital hypothyroidism, cystic fibrosis, hearing loss, congenital adrenal hyperplasia, galactosemia and biotinidase deficiency)".[1] Both sickle cell disease and G6PD deficiency disorders are common hemoglobinopathies that affect Saudi newborn populations in areas like Qatif and Al-Hasa.[6] Detecting these potential hemoglobinopathies using a blood sample (Dry Blood Spots) is possible with high-performance liquid chromatography. This technique can identify hemoglobin F (fetal), A1c, A (adult), S (sickle), C, A2/E, and D.[7]

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