

NEWBORN SCREENING: EXPERIENCE OF BANGLADESH

Fauzia Moslem, Sufia Yasmeen, Mizanul Hasan, MA Karim, Nurun Nahar, Anindita Ahmed

Institute of Nuclear Medicine, Dhaka, Bangladesh

Abstract. Newborn screening for early diagnosis of many preventable diseases is already an established program in developed countries as well as in some countries in Asia. With the control of infectious and communicable diseases, the Bangladesh government is now giving more attention to the preventive aspect of health. The country is now preparing to adopt newborn screening as part of the preventive aspect of health. Among the various activities are laboratory set up, expert visits, pilot studies on CH and training of personnel. A national project to screen newborns for congenital hypothyroidism is now under active consideration. A universal newborn screening program is a highly ambitious project for a country like Bangladesh. Funds to run such a program will be the main problem. The social pattern where still more than 80% of deliveries are done at home is another constraint. However, the enthusiasm of the professionals as well as of the government is a very encouraging thing. Now it needs the support of the international communities.

INTRODUCTION

Bangladesh is a small country of 147,570 sq. km. and has a large population of about 130 million. The annual growth rate of the country is about 2.8% with an estimate of 3.0 million births in Bangladesh every year. Iodine deficiency is endemic in the country. Goiter and other iodine deficiency disorders (IDD) are very common and are known from ancient times. Both adult hypothyroidism and cretinism are quite frequent. With the increased attention on congenital hypothyroidism (CH), the concept of newborn screening has also come up.

Newborn screening for the early diagnosis of many preventable diseases is already an established program in developed countries as well as in some countries in Asia. Bangladesh, a developing country of East Asia, has many other problems to fight in the health sector. With infectious and communicable diseases being controlled, the government is now giving more attention to the preventive aspect of health. With that policy, the country is taking preparations to adopt newborn screening as part of the preventive aspect of health.

Ten years back, Bangladesh participated in an IAEA project using the filter paper technique for examining blood samples for TSH. The initial work revealed the presence of hypothyroidism in children (cretinism) in Bangladesh. However, due to lack of proper knowledge, the newborn screening program could not be continued at that time.

Efforts to establish a pilot project of neonatal screening for congenital hypothyroidism dated as far back

as 1999. After the Korea Meeting organized by the IAEA in May 1999, in connection with the project on neonatal screening for congenital hypothyroidism, (RAS/6/032) new enthusiastic ideas to establish the program of newborn screening emerged in Bangladesh. Several meetings and seminars were organized to focus on the problem of congenital hypothyroidism and the necessity of screening. A national seminar was held in Dhaka on the 18th of June 2000 to discuss the problem. The seminar was successful in creating awareness about the newborn screening program. The program gained much support from the medical community especially the pediatricians and obstetricians. The government of Bangladesh also showed keen interest on the program and approved a pilot project on neonatal screening in Bangladesh. At present, the newborn screening program to detect congenital hypothyroidism is ongoing under the patronization of two projects, one by the IAEA (RAS/6/032) and the other by the Government of Bangladesh.

MATERIALS AND METHODS

For newborn screening of congenital hypothyroidism, TSH was adopted as the screening parameter. A TSH value of 20 mIU/L was used as the cut off value. Blood was collected through the filter paper technique. TSH was measured with filter paper technique by IRMA method. Both cord and heel prick blood were used. However, due to a shortage of hospital beds, most of the babies delivered by normal vaginal route were discharged on the first day. Cord blood was thus collected due to early discharge. The nurses attending the deliveries usually collected the blood in pre-supplied special filter papers.

A person working in the laboratory collects the samples from the specified hospitals of Dhaka city twice in a week. The samples from outside Dhaka were sent by post. The samples were analyzed in the in-vitro laboratory of Institute of Nuclear Medicine, Dhaka twice a week and the results were sent to the respective hospitals. Initially, due to lack of experience, a good number of samples were found insufficient. At present, almost all the samples were good enough for analysis.

Progress of the project

Initial laboratory set up and necessary training for technologists were completed to serve the pilot project. Motivation of the concerned people was also reasonably achieved. Though in small number, the actual screening program was also started. At present, screening is ongoing to detect congenital hypothyroidism only. Blood samples from newborns were collected mainly from big hospitals of Dhaka City. However, some samples were also collected from outside Dhaka. Up to the present, some 10,000 samples have already been analyzed.

Prof Dong Hwan Lee of Korea visited the country in March 2001 under an IAEA program. He discussed many points about newborn screening with the concerned persons. His visit to Bangladesh gave a new momentum for the newborn screening program of the country.

RESULTS AND DISCUSSION

The initial attempt to start newborn screening has been accepted by the government as well as by the professionals with a positive attitude. Screening is ongoing for the last three years under a project of the IAEA (RAS/6/032). One pilot project under the government of

Bangladesh has also been completed successfully. It is of great hope that the government is satisfied at the outcome of the project and has renewed the project for another year. The government is also actively considering the inclusion of the newborn screening project for CH in the Annual Development Budget.

Problems faced

The main problem faced is the difficulty in the collection of samples. Lack of manpower and lack of orientation are two major factors. Funding is also a big problem. Even at present, no separate newborn screening center is available.

Future program

The Government of Bangladesh has agreed, on principle, to run a project on newborn screening to detect congenital hypothyroidism. The government is actively considering the approval of a national project. Bangladesh is also interested to continue the IAEA project (RAS/6/032), which is supposed to go up to 2010.

CONCLUSION

Bangladesh is a developing country with many other problems. The universal neonatal screening program is a highly ambitious project for a country like Bangladesh. Funds to run such a program will be the main problem. The social pattern where more than 80% of deliveries were done at home still, is another constraint. However, the enthusiasm of the professionals as well as of the government is a very encouraging point towards the establishment of a newborn screening program. Now, it needs the support of the international communities.