

SCREENING FOR CONGENITAL HYPOTHYROIDISM - A NEW ERA IN BANGLADESH

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Abstract. Neonatal screening is a new concept in Bangladesh. Currently a pilot program is ongoing where newborns are screened for congenital hypothyroidism (CH). In a country like Bangladesh, where people are still fighting childhood problems like malnutrition, diarrhea and other communicable diseases with a high infant and child mortality rate, instituting a newborn screening program is a challenge. TSH is measured on filter paper using IRMA methods. Both cord and heel prick blood are used. A cut off value of 20 mIU/l is used above which all babies are recalled for serum T4 evaluation. Approximately 2600 newborns have been screened in the pilot program. Of these, 2 newborns were detected with CH (incidence rate 1:1300). Since it is a new program in Bangladesh, effort is mainly given on popularizing the program and building necessary infra-structure. The newborn screening program has been accepted with mixed reaction in the community. Hopefully, the government is developing a positive attitude towards the program. The paediatricians and obstetricians are also interested. The program needs more publicity. Patronization by the government and other international bodies will be essential for continuation of the program.

INTRODUCTION

Congenital hypothyroidism (CH) is one of the common causes of irreversible mental and physical disability if undetected in the neonatal period (Fisher *et al*, 1979; LaFranchi *et al*, 1979; Dussault, 1997). It is largely related to the general problem of goiter and other iodine deficiency disorders which is a major health concern in Bangladesh. Early detection and treatment of congenital hypothyroidism is essential for the prevention of severe mental and physical deformities. Diagnosis and treatment of congenital hypothyroidism must happen before one month of age for therapeutic effectiveness. Early clinical diagnosis is difficult and before newborn screening, most cases of infant hypothyroidism were not detected before three months of age.

In Southeast Asia, priorities for healthcare in children have centered around infectious diseases, malnutrition and curative services. Most countries in the region have experienced rapid or moderate growth in their economies with extensive changes in life style. This has led to improvements in the health of many nations in the region which, in turn, has played a role in redefining health priorities. Attention is increasingly focusing on preventive issues, and diseases that were once considered rare are now receiving attention. One of the areas of interest is in

reducing the burden of conditions that result in the disability of children. Congenital hypothyroidism is an important disease which, while relatively uncommon is clearly identifiable and preventable as a cause of mental retardation (Singh, 1997)

Bangladesh, a developing country of Southeast Asia has the same scenario that is still fighting childhood problems like malnutrition, diarrhea and other communicable diseases with a high infant and child mortality rate. Newborn screening has emerged as a new challenge for the country.

The occurrence of congenital hypothyroidism is known to be present throughout the world, though the incidence varies. It is estimated that the global incidence rate is approximately 1 in 4000 (Fisher, 1979; La Franchi, 1979). However the incidence rate is reported to be alarmingly higher in endemic hypothyroid areas which is 1 in 7 (Burrow, 1988).

Bangladesh is situated in an iodine deficient area in the belt of Brahmaputra. Goiter and iodine deficiency disorders (IDD) are common. Thyroid problems especially goiter and mental retardation have also been recognized in our society since very ancient times. In recent time, various studies have also confirmed the

presence of these problems. The latest national survey in 1993 found the goiter prevalence rate as 47.1%. The same survey also found that 0.5% of the population suffers from cretinism (Yusuf, 1993). In a hospital-based study, Alam *et al* in 1995 found that the prevalence of goiter was 35.36% and hypothyroidism was 10.12%.

Malnutrition is one of the major health problems in Bangladesh and endemic goiter is considered to be one of the main nutritional diseases. In endemic areas whether mothers may suffer from thyroid enlargement, their offspring often suffer from thyroid hormone deficiency which may hamper their mental development, even though clinical signs of cretinism may not be visible.

The incidence of congenital hypothyroidism in Bangladesh has not been systematically studied. Because Bangladesh is situated in an endemic area for iodine deficiency disorder (IDD), the incidence of congenital hypothyroidism is suspected to be high. In a small study in 1992, Moslem found that the incidence of congenital hypothyroidism in Bangladesh could be as high as 9% (unpublished data).

Congenital hypothyroidism has been proved to be successfully detected through newborn mass screening. Newborn screening is recognized as an essential preventive public health program in both developed and developing countries. Increased global awareness has resulted in new national neonatal screening programs in Southeast Asia. Korea, the Philippines, Hongkong, Thailand and Singapore have all established their own successful national neonatal screening programs for congenital hypothyroidism. Bangladesh joined the group in 1999.

At present, two projects on neonatal screening are ongoing, one under the International Atomic Energy Agency (IAEA) and the other under the Ministry of Science & Technology, Government of Bangladesh. At present, blood is collected from babies born at big hospitals of Dhaka city. Few samples are also collected from outside Dhaka.

MATERIALS AND METHODS

For the detection of congenital hypothyroidism TSH is measured on filter paper technique using the IRMA method. Both cord and heel prick blood are used. A cut off value of 20 mIU/L has been taken as positive for CH. All positive babies are recalled for serum T₄ evaluation.

RESULTS AND DISCUSSION

Until now, approximately 2600 newborns have been screened in the pilot program. Of those, 2 newborns were detected with CH (incidence rate 1:1300). Since it is a new program in Bangladesh, effort is mainly given on popularization of the program and building the necessary infrastructures. For that seminar, meetings are being organized to highlight the thing. Efforts are also being given to make the government interested in the program.

Neonatal screening programs for congenital hypothyroidism began in the 1970s and have been adopted by many countries of the world. The program has only recently been introduced in Bangladesh. While the global incidence of congenital hypothyroidism is 1:4000, in Southeast Asia the average reported incidence is 1:3000 (Singh, 1997). The preliminary study in Bangladesh shows the incidence rate to be 1:1300. Since Bangladesh is an endemic iodine deficiency zone, the incidence rate is expected to be higher.

Bangladesh is a thickly populated country of about 130 million. The annual growth rate is also quite high, presently it is about 2.8%. With this population growth, approximately 3 million children are adding to the population each year. If the incidence rate of CH is 1:1000, then approximately 3000 babies are born each year with congenital hypothyroidism.

CONCLUSIONS AND RECOMMENDATIONS

A developing country like Bangladesh has many other burning issues. The problem of congenital hypothyroidism is considered insignificant to those issues. The huge cost involvement for screening is another major point of criticism. So the newborn screening program in Bangladesh has been accepted with mixed reaction in the community. Hopefully, the government is showing positive attitude to the program. The pediatricians and the obstetricians who are mainly concerned with the program are also interested. The program needs more publicity. Patronization by the government and other international bodies will be essential for the continuation of the program.

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