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Epidemiologic study of neonatal hypothyroidism in Qazvin province (years 2016-2020)

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INTRODUCTION

Every child has the right to a level of life that will ensure their physical, mental, and social development. In order to improve the health of children and prevent complications of hypothyroidism, the screening program of neonatal hypothyroidism was implemented in the country since 2005.

Neonatal hypothyroidism is one of the important causes of mental retardation in infants. The purpose of performing newborn screening is to identify the early detection of hypothyroidism, rapid treatment, prevention of complications and reducing the pain of families. Furthermore, this screening allows for understanding of the epidemiologic and physiopathology of this disease in the community.



METHODS

The study was descriptive with 92,403 neonates, of which 4,828 were suspicious cases with Thyroid Stimulating Hormone (TSH) above 5.

Of the suspicious cases, 511 were re-examined, diagnosed, and treated with intravenous tests during 2017-2021.

The following results were obtained in the study of the neonates:

In primary TSH evaluation, 25.3% of neonates had TSH under 5, 46.4% had TSH between 5-9.9, 17.8% had TSH between 10-19.9, and 10.5% above 20.



METHODS AND FINDINGS

50.7% of the neonates identified were treated under 28 days of age, 9.8% between 28-40 days, and 39.5% after 41 days

Of the 511 neonates identified:

43.8% were female and 56.2% were males

17.4% were grade 3, 6.8% grade 4 and 75% without family relation

41.9% were natural birth versus 58.1% by cesarean section

In 20% of infants, there was a history of disease in first-degree relatives.

In the study of 347 diseased children who were reevaluated at the end of 3 years, 65.1% of them had transient hypothyroidism and recovered.

In the study of TSH initial heel test of neonates with permanent hypothyroidism, 66 % of neonates were between 5-9.9, 16.5% between 10-19.9, and 17.5% were above 20.

In the evaluation of TSH test in neonates with transient hypothyroidism, 69% were between 5-9.9, 22% between 10-19.9, and 9% were over 20.



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RESULT

With the implementation of this program, 511 neonates with hypothyroidism were identified and treated, which prevented the complications of this disease (mental retardation, short stature, and deafness), and eliminated the costs associated with this disease that are imposed on families and society.



CONCLUSION

Given that the disease incidence rate in Qazvin province during the years 2017-2021 is 1:189 births, this rate is higher than the country's incidence rate (1:293 births) and the global incidence rate (1:3000-4000 births).

Considering that 66% (80/121) neonates with permanent hypothyroidism had TSH between 5.9-9.9, utilizing the 5 Cut-Off Point selection resulted in timely diagnosis and treatment of 80 neonates with hypothyroidism.