Original Article

Cost-effectiveness analysis for triple markers serum screening for Down's syndrome in Thai setting

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BACKGROUND: Down's syndrome is an important congenital chromosomal disorder that can be seen around the world. The antenatal screening for this disorder is an important processing in present obstetrics.
OBJECTIVE: Due to the concept of first do no harm, the use of noninvasive test is recommended. The triple marker screening test has been introduced for a few years and acceptable for its effi cacy.
RESULT: However, an important concern is on its cost-effectiveness. Here, the author analyze and present the cost-effectiveness of the triple markers serum screening for Down's syndrome in Thai setting.
CONCLUSION: According to this work, the cost per effectiveness of triple markers serum screening is slightly lower than standard amniocentesis test.

Key words: Down's syndrome, screening, serum, triple markers

Introduction

Down's syndrome is an important congenital chromosomal disorder that can be seen around the world.[1] This syndrome is the most common chromosomal disorder that the case can be alive for many years. However, the quality of life of the patient is usually poor due to the fact that all cases have mental retardation.[2] The patients become the big problem of their families and can be the social burden.

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The antenatal screening for this disorder is an important processing in present obstetrics.[3] In the past, it is suggested that any aged pregnant should get the screening for the Down's syndrome of the fetus *in utero*.[4] The use of amniocentesis is the classical practice. However, this is not commonly used due to the invasive amniocentesis process. Due to the concept of first do no harm, the use of noninvasive test is recommended. The triple markers (alpha-fetoprotein, human chorionic gonadotropin, and unconjugated estriol) screening test has been introduced for a few years and acceptable for its efficacy.[5] However, an important concern is on its cost-effectiveness. Here, the author analyze and present the cost-effectiveness of the triple markers serum screening for Down's syndrome in Thai setting.

Materials and Methods

This work is a cost-effectiveness study. The standard medical economics analysis was performed. The protocol in this work is the same as previously published in international publications.[6-8] The context is assigned as Thailand. Here, the cost is assigned as the price of laboratory test quoted at the referencing laboratory in Bangkok Thailand (Special Laboratory, Bangkok, Thailand). The effectiveness is assigned as reported effectiveness in screening or the diagnostic sensitivity, which is hereby referenced to the previously published paper from Thailand.[9] The cost-effectiveness is hereby calculated by the formula "cost-effectiveness = cost/effectiveness" as used in the referencing papers.[6-8] Furthermore, the

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author uses the same cost-effectiveness analysis to assess the standard amniocentesis test as a standard comparison.

Results

According to this work, for the triple markers screening, the cost is equal to 100 US dollar and the effectiveness is equal to 85.7%. The derived is equal to 116.7 US dollar. For the standard amniocentesis, the cost is equal to 116.7 US dollar and the effectiveness is equal to 87.3%. The derived cost-effectiveness is equal to 133.7 US dollar. It seems that the cost per effectiveness of triple marker serum screening is lower than that of standard amniocentesis test.

Discussion

To perform an antenatal test is the present concept in preventive fetal medicine.[3] In case that the defected fetus is diagnosed, the consideration for therapeutic abortion might be considered. Due to the high prevalence of Down's syndrome around the world, the attempt to perform an antenatal test is set around the world, including to Thailand.[10] There are several methods for screening Down's syndrome in Thailand and the triple markers serum screening is also in use.

It is no doubt that the diagnostic property of the triple markers serum screening is acceptable. However, the issue to be discussed is on the cost-effectiveness. Some previous reports mentioned for the cost-effectiveness of using triple markers serum screening[11,12] while the others mentioned that the test was not cost-effective.[13] Hence, to make a decision to implement this test in any setting, the evaluation for cost-effectiveness is needed. According to this work, the cost per effectiveness of triple markers serum screening is slightly lower than standard amniocentesis test. However, this still means that the triple markers serum screening test is more effective. In addition, due to the less invasiveness comparing to standard amniocentesis test, it is recommended to use triple markers serum screening for antenatal screening for Down's syndrome in Thailand.

Conclusion

In Thai context, the triple markers serum screening is more cost-effective than standard amniocentesis test in screening for Down's syndrome.

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