

SHORT COMMUNICATION ΒΡΑΧΕΙΑ ΔΗΜΟΣΙΕΥΣΗ

What are the pitfalls in laboratory analysis for thyroid test on filter paper collected samples?

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Ποιες είναι οι δυσκολίες της εργαστηριακής ανάλυσης δειγμάτων για δοκιμασίες θυρεοειδούς σε διηθητικό χαρτί;

Περίληψη στο τέλος του άρθρου

Key words: Filter paper, Thyroid test

Metabolic-endocrine disturbances, including thyroid disorders, constitute a common medical problem. A variety of thyroid disorders are frequently encountered in everyday clinical practice. In the evaluation and diagnosis of thyroid disease, an important tool is testing of thyroid function. This test, however, is specialized and often cannot be performed in the local hospital. A method introduced to solve this problem is to use a blood samples collected on filter paper for thyroid testing at a reference center. This method is widely used at present, but there are problems associated with using this technique. As assessment was made of the quality of filter paper collected samples processed in a reference laboratory in Thailand, a country in Southeast Asia and the 2-year report is discussed here.

MATERIAL AND METHOD

This study was designed as a retrospective study. The data on the quality of filter paper collected samples in a reference laboratory located in the Songkhla province in Southern Thailand during 2008 and 2009 were reviewed. The laboratory received the referred samples from 14 provinces in the Southern Region of

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Thailand. For screening purposes, a dried skin prick blood sample was collected in each case.

RESULTS

Overall 278,730 samples were screened in the 2-year study period, of which there were 207 samples (0.074%) of poor quality. The details of the poor quality samples are shown in table 1.

COMMENT

Screening for endocrine-metabolic disease is an important part of the practice of laboratory medicine, and a specialized clinical chemistry laboratory is required for the testing. An important limitation is the availability of the test at the local hospitals, and it is not possible to have the analyzer at these sites in the region of this report. The local practitioners who want to perform such testing have to collect blood samples on the filter papers and send the samples to the reference laboratory for analysis.¹⁻³

This process takes time and also poses the risk of error. It should be noted that although the reference laboratory is large and accredited, pre-analytical error can be seen at a very high rate⁴ which puts doubt on the validity of this system of transferring blood samples. From the findings of this assessment, it can be seen that there are several causes of poor quality samples. These are important concerns in using filter paper collected sample for thyroid testing. A considerable number of samples were not acceptable. Chen et al previously noted that the different ways of drying of filter paper was an important factor in deterioration of the sample, affecting the final thyroid test result.⁵ Storage of

Table 1. Details of poor quality of filter paper collected samples for thyroid testing.

Types	Number/valid percentage (%)
Incompletely filtered for extraction	137/66.2
No blood in paper	36/17.4
Too little blood in paper	6/2.8
Contamination	25/12.2
With fungal growth	3/1.4

the filter paper collected sample was also mentioned as an important factor determining the quality of specimen.³ Provision of knowledge to the practitioner about the care needed in sample collection and transportation is of utmost importance. Consideration should be given to the possible implementation of new alternative methods of testing, such as point-of-care testing.

ΠΕΡΙΛΗΨΗ

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Αρκετά νοσήματα του θυρεοειδούς απαντώνται συχνά στην καθημερινή ιατρική πράξη, ενώ η εργαστηριακή παρακολούθηση είναι σημαντική για τη διάγνωση και την αξιολόγηση της θυρεοειδικής νόσου. Εν τούτοις, αρκετές θυρεοειδικές δοκιμασίες δεν είναι δυνατόν να διενεργηθούν σε αρκετά περιφερειακά νοσοκομεία. Μια μέθοδος επίλυσης του εν λόγω προβλήματος είναι η εργαστηριακή ανάλυση δειγμάτων για δοκιμασίες θυρεοειδούς σε διηθητικό χαρτί από το Κέντρο Αναφοράς. Η συγκεκριμένη μέθοδος χρησιμοποιείται ευρέως, ενώ τα διάφορα προβλήματα που προκύπτουν από τη χρήση της θα αξιολογηθούν στο μέλλον. Γίνεται εκτίμηση στην ποιότητα των δειγμάτων και φαίνε-

ται ότι ένα σημαντικό ποσοστό αυτών παρουσίαζε αρκετά προβλήματα ποιότητας. Απαιτείται ιδιαίτερη προσοχή από τον ιατρό στη συλλογή των δειγμάτων, στη μεταφορά τους, καθώς και στην αξιολόγηση του θυρεοειδούς με άλλες μεθόδους μέτρησης.

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Λέξεις ευρητηρίου: Διηθητικό χαρτί, Δοκιμασίες θυρεοειδούς

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