Chula Med J Vol. 52 No. 1 January - February 2008

Problematic cases of urine strip examination: a time effect

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Wiwanitkit V. Problematic cases of urine strip examination: a time effect. Chula Med J 2008 Jan - Feb; 52(1): 59 - 62

Urine strip examination is a widely used test and can be easily available as an over-the-counter test kit. In this paper, the author reported two problematic cases of urine strip examination performed by patients caused by improper time control.

Keywords: *Time, Urine strip.*

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Received for publication. January 20,2007.

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วิโรจน์ ไววานิชกิจ. กรณีศึกษาปัญหาจากแถบจุ่มตรวจปัสสาวะที่เกี่ยวข้องกับช่วงเวลาการอ่านผล. จุฬาลงกรณ์เวชสาร 2551 ม.ค. - ก.พ; 52(1): 59 - 62

การตรวจปัสสาวะด้วยแถบจุ่มถือเป็นการตรวจที่ดี มีใช้อย่างกว้างขวาง และใช้ในเวชปฏิบัติโดยทั่วไป ในบางกรณีผู้นิพนธ์ได้รายงานกรณีปัญหาของการตรวจปัสสาวะด้วยแถบจุ่มตรวจ จำนวน 2 รายการ ซึ่งเป็นการตรวจเองโดยผู้ป่วยและพบปัญหาเนื่องจากควบคุมเวลาที่ไม่เหมาะสม

คำสำคัญ : *เวลา, แถบจุ่มตรวจปัสสาวะ*

Urine strip examination is a widely used basic laboratory examination that can be performed at bed side.[1] In addition, self monitoring by the patient can also be done. However, quality control in urine strip examination is still necessary, and basic concept in pre-analytical – post analytical control must be followed. A limited concern in this test is detected. In this article, the author reported interesting case studies of time effect on urine strip examination. These cases could be used as good case studies in urine examination by strip test in laboratory medicine.

Case studies

Case 1: A female patient consulted her in charge physician regarding urine pregnancy strip test. She said that she bought a test kit from a pharmacist at a drug store and performed the test in the morning on the following day and got negative (1 line) result. However, she left the strip on the desk and she accidentally found that the left test strip became positive, two lines on that night. She then felt very frustrated. Therefore, she went to the physician for consultation. She requested for the urine pregnancy test examination to confirm and the result was negative,1 line. The final confirmation was negative urine pregnancy result.

Case 2: A diabetic patient presented his diabetic self record to the in charge physician and the daily urine glucose strip test results were all negative. However, the capillary glucometer results revealed high glucose levels. The discordant results were investigated for the root cause. Finally, the physician found that the patient falsely dip the strip and abruptly read the result in a shorter period of time than what is suggested in the test kit.

Discussion

Urine strip examination is an easily available laboratory test at present. It can be bought as an over-the-counter test kit. However a good knowledge on the procedure is necessary. Sometimes false result can be interpreted by the general population without good knowledge and it can lead to further unexpected consequences.

The first case is an example of false positive due to prolonged result reading. Basically, it should be read at 3 minutes after dipping.[2] The case of false positive is very interesting. If the urine strip is left or the desk, there might be contamination for other chemicals from the environment and can cause the aberration of results. Also, it might be possible that it was the result of redox reaction. Further studies on this situation are suggested. More than 355,000 tests were sold to the public, pharmacies, laboratories, and doctors.[3] Suhr said that public education by pharmacies could help assure with at least a 95 % reliability rate, especially if the 2nd test was done within 1-2 weeks after the 1st test was taken.[3] These tests are reliable not only when they are taken at the right time, but also through consultation with a doctor to assure certainty about pregnancy. [3]

In the second case, the patient immediately read the result without waiting for the reaction to complete. Therefore, the false negative can be obtained. However, there are other possible causes of false negative urine glucose test. Some drugs or drug classes have been well documented to clinically interfere with these tests. These interfering drugs are ascorbic acid, beta-lactam antibiotics (e.g., cephalosporins and penicillins), levodopa, and salicylates.[4] Drugs or their metabolites that are strong reducing substances produce false-negative results

by the glucose oxidase method.[4] However, there was no evidence of drug usage in this patient. So, it is necessary to assure that the patients understood the correct procedure of this monitoring test before letting them perform on their own.

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