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Pseudohematuria due to red dragon fruit ingestion

Viroj Wiwanitkit*

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In this report, the author describes an interesting case of pseudohematuria without history of previous medication. A 57-years - old female presented to a physician with a complaint of passing "blood" during urination. Her urine appeared to be pinkly red. However, the urine test strip was negative for blood and there is no red blood cell in her urine sample. Other urine biochemical tests are within normal limits. Further history taking revealed that she had just eaten red dragon fruit about 6 - 8 hours before passing the abnormal urine. The possible cause of abnormality is ingestion of red dragon fruit ingestion.

Keywords : *Pseudohematuria, Dragon fruit.*

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**วิโรจน์ ไวรานิชกิจ. ภาวะเลือดออกในปัสสาวะเทียมจากการรับประทานแก้ว้ม้งกรแดง.
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ในรายงานนี้ผู้นิพนธ์ได้รายงานกรณีศึกษาของการเกิดภาวะเลือดออกในปัสสาวะเทียมที่ไม่เกี่ยวข้องกับการได้รับยา ผู้ป่วยหญิงอายุ 57 ปีมาพบแพทย์เพื่อปรึกษาเรื่องปัสสาวะออกมาเป็น "เลือด" โดยปัสสาวะของผู้ป่วยมีสีแดงอมชมพู อย่างไรก็ตามจากการตรวจปัสสาวะไม่พบว่ามีเลือดหรือเม็ดเลือดในปัสสาวะแต่อย่างใด ผลการตรวจปัสสาวะทางชีวเคมีทั้งหมดอยู่ในเกณฑ์ปกติผู้ป่วยให้ประวัติว่ารับประทานแก้ว้ม้งกรมาก่อนมีอาการประมาณ 6 - 8 ชั่วโมง สาเหตุที่เป็นไปได้เกิดจากการรับประทานแก้ว้ม้งกรแดง

คำสำคัญ : ภาวะเลือดออกในปัสสาวะเทียม, แก้ว้ม้งกรแดง

Hematuria is common urological manifestation. Gross hematuria is a common complaint that often leads the patient to seek for urgent care. The diagnostic evaluation bases on specific patient history and physical examination.⁽¹⁾ A verification by laboratory investigation is needed. Less than 3 % of healthy persons, urinalysis shows more than three red cells per high-power field, which is about the limit of sensitivity of test strips for occult blood.⁽²⁾ The presentation of more than three red cells per high-power field is named as hematuria. Even minimal hematuria may herald serious problems and must be investigated.⁽²⁾ Its common causes include infection, urethritis, and urethrotigonitis, stone, and tumor.⁽²⁾ Although hematuria may be caused by coagulopathy, patients with anticoagulant-induced hematuria must be examined for anatomic defects. When it is asymptomatic, hypercalciuria and mild forms of glomerulonephritis are common causes of gross hematuria.⁽¹⁾ If the urine is pigmented but test strips are negative, or test strips are negative but no red cells are seen, pseudohematuria must then be considered. In this article, a case of pseudohematuria due to dragon fruit ingestion is reported.

Case report

A 57-years-old female presented to a physician with a complaint of passing "blood" during urination. She gave her history of illness that she had got an accidental fall 3 days earlier and she notified the grossly red urine on the visiting day. Her urine appeared to be pinky red. However, the urine test strip was negative for blood and there was no red blood cell in her urine sample. Her other urine biochemical tests were within normal limits.

Further history taking revealed that she had just eaten red dragon fruits (*Hylocercus undatus* Rose) about 6 - 8 hours before passing the abnormal urine. Overall, she passed the abnormal urine for only twice on that days (before visiting and on specimen collection for urinalysis). On the following up in the next morning, she had normal pale yellow urination and the urinalysis was still within normal limit. The case was diagnosed pseudohematuria due to dragon fruit ingestion. Since there was no abnormality from any urine examination and the patient had no other complaint, a radiological investigation was not performed. There is no additional following up on this complaint. Therefore, it cannot tell whether the patient repeated ingested the dragon fruit and if so whether she experience the episode of pseudohematuria again.

Discussion

Basically, urinalysis comprises a step to determine red blood cells within a urine sample by a clinical microscopy examination of a urine sediment and urine strip test for hemoglobin. Hematuria can be confirmed by a standard urinalysis. Although most causes of hematuria are benign, urinary tract bleeding may signal a life-threatening disease. Gross and microscopic hematuria share a common differential diagnosis, including urinary tract infection, urolithiasis and bladder cancer. Clinical evaluation may be guided by the patient's age, sex, medical history and physical examination.⁽³⁾

Gross hematuria is a complaint that can be reported by the patient since passing of red urine can be an awful experience to the general population. Indeed, the development of asymptomatic gross or microscopic hematuria is relatively common in

children.⁽⁴⁾ To evaluate the clinical importance of hematuria in children and the necessity for such an evaluation using a defined diagnostic protocol.⁽⁴⁾ Before classifying hematuria as asymptomatic, the physician should be sure that there are no symptoms pointing to an underlying disease. The laboratory workup includes urinalysis, clinical chemistry and renal function tests, and hematological studies.⁽⁵⁾

Sometimes, aberrant red urine sample can be seen. Pseudohematuria is the common etiology. Several causes of pseudohematuria are reported, especially in cases of drug uses. Examples of drugs that cause pseudohematuria are, namely: phenolphthalein laxatives, phenothiazines, rifampicin, pyridium and phenytoin.⁽⁶⁾ However, rare causes due to specific foods should also be noted. The described plants in the literature include beets, blackberries, and rhubarb; however, these plants are not common in Thailand. In this report, the author describes an interesting case of pseudohematuria without a history of previous medication. The cause of abnormality is believed to be caused by ingestion of red dragon fruits.

Red dragon fruit is a tropical fruit which has never been reported as a cause of pseudohematuria in Thailand. The dragon fruit is produced by a plant that belongs to the cactus family.⁽⁷⁾ The plant may grow out of, and over the ground or climb onto trees using aerial roots.⁽⁷⁾ It grows best in a dry, tropical or subtropical climate where the annual rainfall ranges from 20-50" per year. In wet, tropical zone, the plant may also grow well.⁽⁷⁾ The natural habitat of this plant is Southeast Asia, Vietnam. An anthocyanin pigment layer appears between the flesh and skin of the dragon fruit is believed to be the cause of hematuria.⁽⁸⁾

This pigment has no effect on human body and is excreted via urination. The urinary levels of anthocyanins reach a maximum between 3 and 6 h after ingestion, and the recovery of total anthocyanins in the urine over 24 h was estimated to be 5.0 % of the amount consumed.⁽⁹⁾ Indeed, anthocyanin is the same pigment found in beetroots that causes pseudohematuria. Since dragon fruits are newly introduced for the Thais, the physician should aware for pseudohematuria caused by dragon fruit ingestion.

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Cases of problems due to computer of laboratory information system : Pitfalls and implications

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Presently, computer is used in many aspects including medicine. The application of computer technology in medical laboratory helps the laboratory process a lot. Recently laboratory information system (LIS) became a new tool for laboratory management.⁽¹⁻³⁾ However some times, the limitation of the LIS can be seen. Here, the author discusses two problematic cases in laboratory medicine due to the problem of computation LIS system.

Case Studies

Case 1. A complaint was sent to the urinalysis unit of the central laboratory of the hospital. A patient complicated for an abnormal laboratory report. He notified that he got a report of hematuria with an additional comment that this should be due to menstruation. He felt upset and worried about this report, therefore, he sent a complaint to the laboratory. He complained that if a man could have menstruation.

Case 2. An episode of computer network problem is noted in the laboratory. The result of laboratory Investigation of a patient cannot be validated and jammed in the system. Root cause analysis revealed that there are two confirmations on request of this patient. However, the laboratory workers cannot delete the repetitive from the system.

Discussion

LIS is widely used in medical laboratory at present (Figure 1). The fill system cover request management at wand laboratory analysis and report management at laboratory and result report to the patient and physician management. Although the system is automatic it still required humanistic control such as keying of the information. Safely management and quality control of LIS system is therefore necessary. Monitoring of error is still necessary.

Data input → data processing → Data output

Figure 1. General process of LIS.

For the first case, the problem is not the error of the system. The process is complete however the problem is due to the parameter setting of the result report section. Careful setting of the comment adding to the laboratory result is necessary. Considering the second case, this is the real existence of network LIS problem. The jamming of the data from the repetitive input can be seen. Careful setting of allowance for keying of the data as will be deletion of the data is necessary. In addition, classification of degree of secret accompanied with specific password for corresponding worker is required.⁽⁴⁾

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Table 1. Safety management and quality control of LIS.

Machine	Network		
	input	process	output
Prevention of fire, stealing, breaking	Prevention of repetitive request, illegal request, in correct request	Prevention of incorrect analysis and report illegal analysis	Prevention of data hacking, secret of patient

Conclusion

LIS is widely used in laboratory medicine at present. Problems of LIS can be seen. An example of two problematic cases due to computer of LIS are hereby reported.

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