

Haematuria in the Elderly: a Review

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Abstract

Haematuria is a common complaint in the elderly. Microscopic haematuria is first suspected after a dipstick in urine and confirmed with urine microscopy. The causes of haematuria in the elderly may be renal or extra-renal including clotting disorders. This article is a review on haematuria in the elderly.

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Introduction

Aging is a physiological process that causes changes in many organs in the body including the kidneys with subsequent structural and functional changes. For these reasons the elderly are more likely to develop kidney diseases that may present with haematuria¹. Haematuria is the presence of red blood cells in urine² and it is a common symptom of patients in primary care practice³. It may be the only symptom of a disease condition or there may be other associated symptoms⁴. Haematuria in the elderly is a sign of an underlying disease which may be benign or malignant⁵. The definitive diagnosis of haematuria is made following microscopic examination of the urine except where the haematuria is visible to the naked eyes. There are various definitions for haematuria. Haematuria may be a symptom of urinary tract infection and it may be macroscopic or microscopic. Taking regular doses of aspirin could be a potential cause of microscopic haematuria in the elderly. The prevalence of microscopic haematuria in a study by Moudi et al was 27.27% in regular users of aspirin⁶. The prevalence of microscopic haematuria in this study was significantly higher among the regular users of aspirin compared to non-users.

Types of Haematuria in the Elderly

The types of haematuria in the elderly are the same as haematuria in the general population. There are basically two types of haematuria namely:

1. Gross or Macroscopic Haematuria: The haematuria is visible to the naked eyes in macroscopic haematuria.
2. Microscopic Haematuria: This is when the haematuria is not visible to the naked eyes. There are various definitions for making a diagnosis of microscopic haematuria from different authorities. The American Urological Association defines microscopic haematuria as three or more red blood cells per high power field (HPF) on microscopic analysis of two or three properly collected urine specimens^{4,5}, the Canadian Urological Association (CUA) defines it as greater than two red blood cells per high power field (RBC/HPF) on two separate urinalysis in the absence of exercise, menses, sexual activity or instrumentation⁴. The initial suspicion for microscopic haematuria is made by using a dipstick.

It is confirmed with microscopy of the urine⁷. The urine shall be freshly voided and the patient should not have any form of sexual activity, exercise and instrumentation of the genitourinary system.

Causes of Haematuria in the Elderly

Haematuria in the elderly is caused by a vast number of causes arising either from the urinary system or elsewhere. It may be a sign of disease of the genitourinary system or non-urologic disease⁸. Therefore blood in the urine is a sign of an underlying condition and should be investigated thoroughly⁹. Haematuria may arise from any part of the urinary tract². The causes of haematuria in the elderly are:

1. Urinary tract infection including schistosomiasis.
2. Malignancies of the urinary tract. This includes malignancy of the bladder, urethra, ureter, kidneys. Malignancies of the urinary tract usually present with macroscopic haematuria, 88% with bladder cancers and 40% with renal cancer⁴. Macroscopic haematuria may be the only sign of a malignancy of the genitourinary system⁷.
3. Ureteric and renal stones
4. Nephropathies
5. Benign prostatic hyperplasia
6. Radiation induced cystitis
7. Clotting disorders such as haemophilia
8. Inflammation of the kidney, urethra, bladder or prostate
9. Drug induced haematuria: Some drugs that can induce haematuria³ are:
 - a. Cyclophosphamide
 - b. Amitriptyline,
 - c. Rifampin,
 - d. Non-Steroidal Anti-Inflammatory Drugs

Haematuria that is intractable may be caused by radiation cystitis, carcinoma of the bladder, and cyclophosphamide induced cystitis¹⁰. False haematuria may arise from food pigments, drug metabolites and malingering². In some cases, there is no identifiable cause of the haematuria. This may be from transient benign physiological conditions, vigorous physical exercise and sexual intercourse⁷.

Management of Haematuria in the Elderly

Management of haematuria in the elderly involves taking a comprehensive history, physical examination, conducting investigations and drugs. Sometimes blood may be required.

History Taking

Haematuria may be the only presenting complaint especially when it is macroscopic or in association with other symptoms like fever, nausea and vomiting. It may also be incidental finding when screening for other diseases or routine screening especially if it is microscopic. The history should include detailed history concerning genitourinary symptoms such as:

1. Frequency
2. Incontinence
3. Change in the character of the urine stream⁹
4. Pain
 - a. Dysuria: Macroscopic haematuria that is painless is likely due to malignancy of the genitourinary tract¹³.
 - b. Abdominal pain: Nature of the pain if it is dull or sharp and also its location.
5. Urgency
6. If there are no other symptoms
7. If it is episodic or continuous
8. During urination if the haematuria initial, terminal or total
9. Periorbital and pedal oedema
10. Use of nephrotoxic drugs medications
11. Co-morbidity
12. Family history of coagulation disorders and renal diseases
13. Passage of stones, tissues and clots

Physical Examination

General Physical Examination is Done

1. Checking for pallor
2. Check for edema, periorbital edema and pedal edema
3. Blood pressure measurement
4. Examination of the cardiovascular system

5. Examination of the urinary system
6. Abdominal examination

Symptoms of diseases of the lower urinary tracts are common in the elderly^{11,12}.

Investigations For The Elderly Presenting With Haematuria^{7,12}

1. Urine tests: urine microscopy, culture and sensitivity
2. Blood tests:
 - a. full blood count, serum, urea and creatinine
 - b. Kidney function tests including glomerular filtration rate
 - c. Clotting profile
 - d. Whole blood or blood products if available should be cross matched and saved for macroscopic haematuria depending on the state of pallor/ anaemia and also the cardiovascular stability of the patient.
 - e. Prostate specific antigen for males

When the creatinine is elevated and there is proteinuria, it signifies that the haematuria is likely from a medical disease.

3. Radiological Imaging
 - a. Abdominal ultrasonography
 - b. Computed tomography scan (CT-Scan)
 - c. Magnetic resonance imaging
 - d. Intravenous pyelogram

In the management of haematuria, imaging of the urinary tract, urine cytology and cystoscopy are necessary as some small cancers may not be visible on some imaging techniques¹².

Management of Haematuria in the Elderly

The management of haematuria is dependent on if it is macroscopic or microscopic, and also on the cause of the haematuria if it is known. Microscopic haematuria can be managed on an out-patient basis. In macroscopic haematuria, the patient should be resuscitated¹³ and blood transfusion or blood products are transfused when necessary. Macroscopic haematuria may be managed as an out-patient depending on the quantity of blood lost and cardiovascular stability of the patient. The patient should be encouraged to drink

enough fluid to remain hydrated. Free drainage of urine should be ensured with or without a urinary catheter in-situ. The patient should be followed up after discharge to monitor any reoccurrence especially if the haematuria was caused by a malignancy. The cause of the haematuria should be identified and treated. Macroscopic haematuria is a common presentation seen in the emergency room¹³. The indications for in-patient management of haematuria in the elderly are clot retention, cardiovascular instability, uncontrolled pain, sepsis, acute kidney injury, coagulopathy, severe comorbidity, and social restriction¹³.

Conclusion

Haematuria which is the presence of red blood cells in urine in the elderly has been highlighted in the article. It can be microscopic or macroscopic. There are several causes of haematuria in the elderly. Investigations to be done include blood tests, urine tests, and imaging of the urinary tract. The definitive treatment depends on the cause of the haematuria although sometimes the cause is unknown.

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