Chapter 9
Indication for Biopsy: Hematuria

Introduction to Hematuria

This means that hematuria is the main clinical abnormality, with or without proteinuria under the nephrotic range, with normal renal excretory function, with or without hypertension. If there is the nephrotic syndrome, or if function is abnormal, the approach to the study of the specimen is considered in Chapters 6, 7, and 8, as appropriate.

Hematuria is a common reason for renal biopsy, although different nephrologists have different criteria for biopsy. Many do not biopsy people without proteinuria.

Especially in children, there may be a family history of hematuria, or hematuria may be found on testing the urine of parents and siblings.

Often the pathologist is not told on the request form how the hematuria was detected, and whether there is only microscopic hematuria, or episodes of macroscopic hematuria, or both macroscopic and microscopic hematuria, and how much proteinuria there is. Because the information given to the pathologist about such things as type of presentation and family history may be incomplete, study of renal biopsy specimens in hematuria is described without distinction between macroscopic hematuria and microscopic hematuria, or between hematuria with and without proteinuria, or between those with and without a family history.

Loin pain with hematuria is a clinical syndrome that the pathologist should investigate in the way that all hematuria is investigated. Loin pain/hematuria syndrome is not a pathologic diagnosis.

Detection of Hematuria

Macroscopic hematuria is seen as discoloration of the urine, which may be any colour between red and dark brown. People noticing this change in their urine usually seek medical advice.

Microscopic hematuria is detected by urinalysis, using dipsticks, which are dipped in urine, and change colour if blood is present. Usually, this test is repeated a few times at intervals, to make sure that it is not just a transient finding.

 Apparently healthy people who may have their urine tested include pregnant women, and people who have a medical examination, for instance, before entry
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into various occupations, or when they apply for life insurance, or as part of a health check, or when taking part in some sports. Relatives of people known to have a renal disorder may also be tested. Children’s parents and siblings are usually much easier to test than relatives of adults, simply because children’s close relatives are likely to live together and to come to a physician together. Sometimes medical students, medical practitioners, and others related to the medical profession discover urinary abnormalities in themselves by random testing.

Other people who may be found to have microscopic hematuria are those with illnesses, especially long lasting ones which lead them to see physicians frequently, and mean that they are likely to have their urine tested. Their illnesses may be related directly or indirectly to the kidney, such as hypertension, or not apparently related, such as rheumatoid arthritis. Because people can have more than one disease, they may have a renal disorder that is coincidental.

Investigation of Hematuria

A renal biopsy is not done on every person with hematuria, and is only done after appropriate investigations to exclude other causes of hematuria. Biopsy is usually done late, if at all.

Urinary tract infection is excluded before a renal biopsy is done to study hematuria. In adults, there have almost always been several other investigations, such as cystoscopy and radiologic examination of the urinary tract, to exclude explanations of hematuria that are often called urologic causes. These include disorders of the prostate, carcinoma of the bladder, stones in the urinary tract, and carcinoma of the kidney.

In children, hematuria is investigated by ultrasonography and radiologic examination of the kidneys, because causes in the bladder are rare, and cystoscopy is not usually worthwhile.

Some centres make use of microscopy of urine to help to determine whether blood cells in the urine are from glomeruli, or from the rest of the kidney and the lower urinary tract. Red blood cells from glomeruli have abnormal shapes, and are called dysmorphic.

Study of renal biopsy specimens in hematuria is straightforward, and the pathologist can usually give a satisfactory diagnosis on these specimens. There are always a few specimens that have no abnormality detectable by every technique that the pathologist uses, and the explanation of hematuria remains undetermined.

Value of a Renal Biopsy in Hematuria

Often the diagnosis in people with hematuria makes no immediate difference to the clinical management if urologic causes have been excluded. Some nephrologists think that a biopsy is unnecessary.