Hematospermia

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INTRODUCTION

Hematospermia, the presence of grossly bloody or blood-tinged penile (seminal) ejaculate, is an uncommon condition. While it is usually alarming to patients, the cause is almost always benign.

Because of the paucity of research literature, the approach to hematospermia is based on the few available studies and clinical experience. Searching for the rare causes that have been identified in case reports is not likely to be productive [1], and the relative frequencies of causes reported in urology specialty practices may not apply to primary care practice. The most important lesson from the literature is that hematospermia is almost never a sign of cancer in younger patients.

This topic will review the etiology, evaluation, and treatment of hematospermia.

DEFINITION

Hematospermia is the presence of grossly bloody or blood-tinged penile ejaculate. It is distinct from hematuria (blood in the urine) and from bloody discharge or bleeding from the urethra, although these conditions may also be present depending on the etiology and aid in the evaluation. For example, hematospermia in a patient with hematuria from known urethral or renal trauma could be due to those conditions, and the evaluation of hematospermia would only be needed if it persisted after those hematuria-causing conditions resolved. (See 'Etiology and epidemiology' below.)

ETIOLOGY AND EPIDEMIOLOGY

Post-procedural — The most common cause of hematospermia is a prostate biopsy. Hematospermia occurs in more than 80 percent of men undergoing prostate biopsy and lasts for an average of three to four weeks [2,3]. Hematospermia is also common after radiation treatment for prostate cancer, occurring in as many as 25 percent of patients after external beam radiation [4] and 17 percent after brachytherapy [5]. In addition, vasectomy can cause hematospermia for a week or more.

Sporadic — A variety of other conditions have been reported in patients with hematospermia (table 1) [6-45]. However, it is uncertain whether these conditions are causative or coincidental, and symptoms are idiopathic in a substantial proportion of patients. In men over 40 with hematospermia, genitourinary cancers should be considered in the differential diagnosis, but the rate of such cancers is low, even after long-term follow-up.

Potentially related conditions include:

- Benign and malignant disorders of the prostate gland, seminal vesicles, spermatic cord, and ejaculatory duct system
- Urogenital infections including sexually transmitted infections (eg, chlamydia, herpes simplex virus, gonorrhea, trichomonas)
- Schistosomiasis
- Cancer metastatic to the seminal vesicles (eg, melanoma) [21,46]
- Vascular malformations
- Congenital and drug-induced bleeding disorders
- Frequent daily ejaculation over a period of several weeks

Information on the relative frequency of the many causes of hematospermia is found in case series from urological specialty practices [6-10,47]. They suggest that hematospermia is almost always the result of a benign condition, that often no clear cause can be identified, but that the condition usually resolves spontaneously [7-10]. Cancers are rare and occur almost exclusively among patients over age 40 years; serious causes are virtually never found among patients under age 30 years.

In one case series, 270 men with hematospermia underwent transrectal ultrasound [47]. The patients (age 15 to 75 years) had experienced hematospermia for a mean of 3.4 months (range: one day to eight years). A variety of minor abnormalities were found in the seminal vesicles, ejaculatory ducts, and prostate. No cancers were found in patients less than 40 years old. Eight of 126 patients (6.3 percent) over 40 had cancer (five prostate, two seminal vesicle, one bladder).

Hematospermia may be associated with an increased risk of prostate cancer in older men. In one study of men undergoing prostate cancer screening, a history of hematospermia was associated with cancer in men over 50, but certain limitations with the study reduce confidence in the findings [48]. (See 'Prostate cancer screening' below.)

EVALUATION

Our approach — The etiology of hematospermia is almost always a benign condition and an extensive initial evaluation is usually not indicated. Our initial evaluation is the same for men of all ages and consists of a history, physical examination, and urinalysis. Other initial studies are indicated only if abnormalities are suggested by these measures. Although many experts recommend a more aggressive evaluation for even a single episode of hematospermia in a man over age 50, we do not believe existing evidence supports the need for this.

All patients with persistent unexplained hematospermia (lasting longer than one month) should be evaluated with transrectal ultrasonography and with referral to a urologist. (See 'Persistent hematospermia' below.)

Initial evaluation — The initial evaluation includes a history and physical examination, as well as testing in some patients. Our approach to the initial evaluation is presented in the algorithm (algorithm 1).

History and physical — The history may be revealing of a possible cause in several instances:

- A recent biopsy (within past six weeks) of the prostate gland
- Recent treatment (within past six weeks) for prostate cancer, either external beam radiation or brachytherapy
- Symptoms of urethritis such as dysuria or urethral discharge
- History of a malignancy of the prostate gland, seminal vesicles, spermatic cord, or ejaculatory duct system
- Use of medications associated with hematospermia (eg, antiplatelet drugs, anticoagulants) [49]
- Travel to, or either current or past residence in, an area endemic for schistosomiasis [11,12,50-52] (see "Schistosomiasis: Epidemiology and clinical manifestations")

The physical exam should be used to identify organ enlargement or masses in the scrotum, or nodularity or enlargement of the prostate gland.

Urinalysis and other urine tests — A urinalysis should be performed on all patients with hematospermia to exclude infection; bacterial culture should be obtained as indicated by the results of the urinalysis.

Men with symptoms of urethritis, and those with pyuria without bacteria, should be tested for chlamydia and gonorrhea. We do not test asymptomatic men [13,53]. (See "Clinical manifestations and diagnosis of Chlamydia trachomatis infections".)

If these tests are negative but symptoms of urethritis persist, infection with other agents such as trichomonas should be considered. (See "Urethritis in adult males".)

Semen analysis in selected patients — Examination of the semen is not a routine part of the evaluation of patients with hematospermia. There are, however, some situations in which semen examination can be helpful.

- If there is doubt about whether the patient actually has hematospermia, the patient can ejaculate into a condom and the ejaculate can be examined for the presence of blood.
- Semen evaluation may be helpful when the patient has a history of travel or residence in an area in which schistosomiasis is endemic. In these cases, microscopic examination of the semen can detect *Schistosoma haematobium* or *Schistosoma mansoni*.

Other studies — Based on the results of initial evaluation, other studies may be occasionally indicated. These include cystoscopy, contrast studies (eg, vasography), or biopsies of the prostate, testes, or other organs.

Persistent hematospermia — All patients with persistent unexplained hematospermia (lasting longer than one month) and those who do not have resolution of hematospermia after treatment for infectious causes (eg, urethritis, schistosomiasis), should be evaluated with transrectal ultrasonography and urology referral. Transrectal ultrasound is the imaging procedure of choice for patients with hematospermia [8,9,54,55]. It can identify structural abnormalities of the prostate gland, seminal vesicles, and spermatic cord and guide biopsies if any suspicious abnormalities are identified in those organs.

Magnetic resonance imaging (MRI) is a second-line imaging test that may occasionally be helpful when transrectal ultrasound is technically inadequate or nondiagnostic [14,56]. However, some studies suggest that MRI for the evaluation of hematospermia leads to a higher rate of prostate biopsies with no change in the cancer detection rate [57]. (See "The role of magnetic resonance imaging in prostate cancer".)

Prostate cancer screening — Routine prostate-specific antigen (PSA) is not necessary in men with hematospermia. However, as some studies suggest that men over age 50 with a history of hematospermia are at a slightly higher long-term risk of prostate cancer [48], it is reasonable to take the presence of hematospermia into account when making decisions about screening for prostate cancer. (See "Screening for prostate cancer".)

TREATMENT

Reassurance for most patients — No specific medical or surgical treatment is available for most men with hematospermia. This fact, combined with the low frequency of serious abnormalities, suggests that the most important therapeutic intervention is reassurance. Patients in whom hematospermia is related to a recent procedure such as a prostate biopsy can be advised that their symptoms should resolve within a few weeks.

Patients with hematospermia are typically anxious and concerned that their bloody semen is a sign of cancer. Patients can be encouraged that most cases resolve spontaneously and that occult cancer is an unlikely diagnosis.

Patients with identified abnormalities — Specific treatable conditions that are identified during the evaluation, such as infection or tumor, should be treated according to current practice standards. Some structural abnormalities of the urogenital tract, such as müllerian duct cysts and ejaculatory duct obstruction, may be treatable endoscopically [35,58].

Limited role for presumptive prostatitis therapy — Although some patients with hematospermia have prostatitis [7,10], there is no evidence that empiric antibiotic treatment for a "presumptive" diagnosis prostatitis is effective. This approach, used by some clinicians, is based on the rationale that prostatitis is relatively common, can cause hematospermia, and is easily treated with antibiotics [54]. However, any apparent beneficial effect may simply be due to the fact that hematospermia resolves spontaneously in most patients. (See "Chronic bacterial prostatitis", section on 'Management'.)

Emerging therapies — Finasteride may be used in some patients with refractory symptoms. In one trial of patients with refractory idiopathic hematospermia (n = 24), hematospermia resolved in 67 percent of patients treated with finasteride for three months, compared with 25 percent of placebo-treated patients [59].

Another emerging treatment is endoscopic holmium laser therapy, which may be used in the uncommon scenario of patients in whom ejaculatory duct obstruction or calculi are thought to

be the cause of persistent hematospermia. However, this approach to treatment has only been described in single-center case series [60,61].

There are also several single-center reports of using transurethral seminal vesiculoscopy to identify and treat any unidentified causes of persistent hematospermia. Reported resolution rates at three months range from 68 to 100 percent [62,63], with one-year recurrence rates as low as 6 percent [63].

In addition, one small (45 patients) case series described using continuous antibiotic infusion via transrectal ultrasound-guided seminal vesicle catheterization as a treatment for persistent refractory hematospermia. Antibiotic infusion was used regardless of whether or not bacterial infection was documented. At one to three years of follow-up, 93 percent of patients had no recurrence of hematospermia [64].

SUMMARY AND RECOMMENDATIONS

- Hematospermia is almost always a benign condition. There are multiple causes for hematospermia (table 1); the most common etiology is prostate biopsy. (See 'Etiology and epidemiology' above.)
- For patients who are otherwise asymptomatic, the initial evaluation consists of a history, physical examination, and urinalysis. Other studies are indicated only if abnormalities are suggested by these initial measures or if hematospermia persists (algorithm 1). (See 'Evaluation' above.)
- Men with hematospermia and symptoms of urethritis should be tested for gonorrhea and chlamydia. Persistent unexplained hematospermia (lasting longer than one month) should be evaluated with transrectal ultrasonography and referral to a urologist. (See 'Urinalysis and other urine tests' above and 'Persistent hematospermia' above.)
- In most cases, the evaluation will not identify a clear cause of hematospermia. Thus, there is no specific medical or surgical treatment for the majority of patients, and the condition will usually resolve spontaneously. (See 'Treatment' above.)
- When no serious abnormalities with hematospermia are found, the most important therapeutic intervention is reassurance. (See 'Reassurance for most patients' above.)
- Routine prostate-specific antigen (PSA) is not necessary in men with hematospermia. However, men over age 50 with a history of hematospermia are at a slightly higher long-term risk of prostate cancer, and it is reasonable to take the presence of hematospermia

into account when making decisions about screening for prostate cancer. (See 'Prostate cancer screening' above.)

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Topic 6888 Version 32.0

GRAPHICS

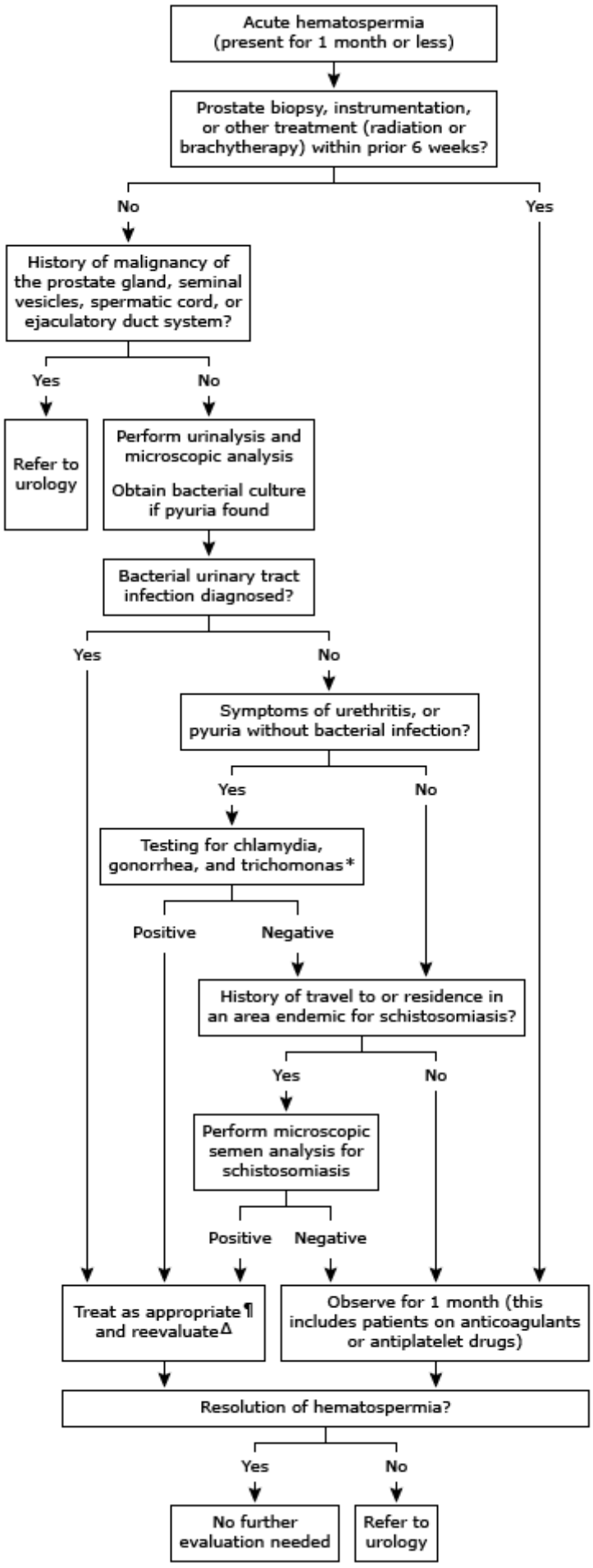
Abnormalities reported in patients with hematospermia

Infections
Sexually transmitted infections (eg, Chlamydia, trichomoniasis, herpes simplex virus)
Uropathogens (eg, *Enterococcus faecalis*)
Cytomegalovirus
Schistosomiasis
Tuberculosis
Malignant tumors (urogenital)
Bladder cancer
Prostate adenocarcinoma
Prostate sarcoma
Testicular tumors
Malignant tumors (metastatic)
Melanoma
Renal cell carcinoma
Prostatic disorders
Benign prostatic hyperplasia
Prostatic calculi
Prostatic telangiectasia
Prostatic urethral hemangiomas
Prostatic urethral polyps
Prostatic utricle (or müllerian duct) cysts
Prostatitis
Seminal vesicle disorders
Adenomyosis
Amyloidosis
Calculi
Cancer
Cysts

Dilated seminal vesicles
Ectopic prostate tissue
Hemorrhage
Spermatic cord and ejaculatory system disorders
Cavernous hemangiomas
Ejaculation duct obstruction
Epididymitis
Urethral disorders
Ectopic prostate tissue
Papillary urethritis
Vascular disorders
Genitourinary varices
Malignant hypertension
Other
Aspirin therapy
Hyperuricemia
Prothrombin deficiency
von Willebrand disease

Graphic 64639 Version 7.0

Evaluation of acute hematospermia


Acute hematospermia (present for 1 month or less)
Prostate biopsy, instrumentation, or other treatment (radiation or brachytherapy) within prior 6 weeks?
No
Yes
History of malignancy of the prostate gland, seminal vesicles, spermatic cord, or ejaculatory duct system?
Yes
No
Refer to urology
Perform urinalysis and microscopic analysis
Obtain bacterial culture if pyuria found
Bacterial urinary tract infection diagnosed?
Yes
No
Symptoms of urethritis, or pyuria without bacterial infection?
Yes
No
Testing for chlamydia, gonorrhea, and trichomonas*
Positive
Negative
History of travel to or residence in an area endemic for schistosomiasis?
Yes
No
Perform microscopic semen analysis for schistosomiasis
Positive
Negative
Treat as appropriate¶ and reevaluateΔ
Observe for 1 month (this includes patients on anticoagulants or antiplatelet drugs)
Resolution of hematospermia?
Yes
No
No further evaluation needed
Refer to urology

* Refer to UpToDate topics on clinical manifestations and diagnosis of Chlamydia as well as urethritis in adult men.

¶ Refer to UpToDate topics on the treatment and prevention of schistosomiasis as well as urethritis in adult men.

Δ Reevaluate after 2 weeks for urinary tract infection or urethritis, and after 1 to 2 months for schistosomiasis.

Graphic 129435 Version 2.0

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