Hematospermia in a young adolescent: Clinical and diagnostic long-term follow-up

Introduction

Hematospermia is the presence of blood in the ejaculate which is usually a painless, benign, isolated, and self-limiting symptom. However it provokes great concern and anxiety (1-4). Haematospermia may affect men of any age after puberty with its peak incidence in men aged 30 to 40 years. The age range varies from 14 to 74 years. In adults, it may result from many causes including infectious and inflammatory disorders (39% to 55% of cases), malignancies and trauma (4-13% of cases). However, for many of the patients, the exact cause of hematospermia remains undefined, while their symptoms persist or recur. Predisposing diseases are prostatitis, epididymitis, urinary stones, tuberculosis, arterial hypertension and hematologic diseases (1-4). Newer imaging modalities have improved the diagnosis of hematospermia (5). We herein report a case of hematospermia in an adolescent triggered by hemorrhage in the right seminal vesicle.

Case presentation

A 12.5 years old white boy who was brought to medical attention by his mother because she noted blood stains on his underpants interpreted as “sleep nocturnal ejaculator” (wet dream) twice. He was not sexually active and he denied having masturbation. No history of dysuria was reported. He was treated at the age of 9 years, with leuprolide for precocious puberty associated with pineal cyst which was stopped at the age of 11 years. There was no family history of hemorrhagic disease. No medication or drug used in the last year. His physical and genital examinations were unremarkable. The blood pressure was within the normal range (110/60 mmHg), and body weight was 51.7 kg with a height of 171.5 cm.

He was fully sexually mature (pubic hair: Tanner’s stage 4; testicular volume 15 ml, bilaterally).

Urine analysis and culture, serum prostate specific antigen (PSA) (0.6 ng/ml), renal and bladder ultrasound were normal. Therefore, the family was reassured and a clinical follow-up every 3 months was advised. Hematospermia occurred also with an incomplete penile tumescence during a medical examination. The seminal fluid was brown in color with an apparent normal viscosity.

Summary

Hematospermia may affect men of any age after puberty. The age range varies from 14 to 74 years, with its peak incidence in men aged 30 to 40 years. Urogenital inflammation and infection are the most common causes of hematospermia. We report a case of recurrent hematospermia in a 12.5 years old white boy caused by hemorrhage in the right seminal vesicle diagnosed by MRI. Some authors have speculated that obstruction or stricture at the level of the verumontanum orifice or stenosis of the ejaculatory duct in adults may be the basic pathophysiology of persistent or recurrent hematospermia. Our patient was not treated with anti inflammatory drugs or antibiotics and the transurethral seminal vesiculoscopy was not required due to infrequent recurrence of hematospermia (4 episodes in 2 years). Hematospermia disappeared spontaneously within 2 years and did not recur for the following year of follow-up.

Key words: Hematospermia, adolescent, etiology, diagnosis, follow-up.

Parole chiave: Ematospermia, adolescente, eziologia, diagnosi, follow-up.

Case Report
The urine strip test of seminal fluid was positive for blood (+ + +). Trans-rectal ultrasound (TRUS), which is considered as the first-line modality for genitourinary tract imaging in adults was excluded because of its unpleasant implementation. Therefore, due to recurrence of hematospermia, a magnetic resonance imaging (MRI) of the pelvic region was requested. MRI showed high-intensity signals on T1-weighted images suggesting hemorrhagic focus in the right seminal vesicle. In the absence of relevant symptoms and because of the small size of the lesion a conservative approach was taken with periodic clinical follow-up. MRI was repeated after 10 months due to the persistence of hematospermia. The high signal intensity on T1-weighted right vesicle images was confirmed. Unfortunately the medical description of T2-weighted images was not reported. Our patient was not treated with anti-inflammatory drugs or antibiotics and the transurethral seminal vesiculoscopy was not required due to infrequent recurrence of hematospermia (4 episodes in 2 years). Hematospermia disappeared spontaneously within 2 years, and did not recur during the following year of follow-up.

**Discussion**

Doctors have been diagnosing hematospermia for centuries — even the Greek physician Hippocrates, who lived around 460 to 377 B.C., described it. The true prevalence of the condition is unknown. Review of the literatures concerning hematospermia indicates its extreme rarity in adolescents (6-8). This condition was believed to be "benign and self-limited" but, thanks to improved imaging techniques, the number of idiopathic cases are going to be less.

In adults, cases of primary and solitary hematospermia can be adequately assessed by proper genital and rectal examination, blood pressure measurement, urinalysis, and, PSA-test. A urinalysis should be performed on all patients with hematospermia to exclude infection; bacterial cultures are obtained as indicated by the results of the urinalysis. Pyuria without bacteriuria may be a clue to chlamydial infection, one of the reported (though uncommon) causes of hematospermia. Men with hematospermia and symptoms of urethritis should be tested for chlamydia and gonorrhea. In men with hematospermia who are otherwise asymptomatic, some authors suggest testing for sexually transmitted infections (1-3).

Persistent and recurrent cases of hematospermia are best evaluated by trans-rectal ultrasound examination, cystoscopy, computer tomography and magnetic resonance imaging. Treatment depends on the diagnostic findings but often simply involves reassurance (9).

Seminal vesicles (SVs) are paired hollow sacculated structures located posterior to the bladder, in front of the rectum in the recto vesical pouch. They are located immediately lateral and inferior to the ureter and lateral to the vas deferens (Figure 1) (9).

**SVs produce and secrete the seminal fluid, which contributes 50%-80% of the ejaculate volume (9). The normal SV measures 3.0 cm ± 0.8 in length and 1.5 cm ± 0.4 in diameter (9). The normal volume of the SV is 13.7 mL ± 3.7 (9-11). The wall of the SV normally measures 1-2 mm in thickness at MR imaging. The size of the SV increases with age and then decreases with advancing age (9, 10). The SVs are seen as elongated fluid-containing structures with thin septa.**

Non-invasive imaging, such as trans-rectal ultrasonography (TRUS) (11) and magnetic resonance imaging (MRI) may play an important role in the diagnostic workup of men with hematospermia, particularly in those who are > 40 years old, have other associated symptoms or signs of disease, or have persistence of hematospermia (12). Recent data suggest that SVs and ejaculatory duct cysts or hemorrhagic lesions account for most of the identifiable causes of hematospermia. Fifty-two of 86 men in a recent study were found to have lesions in association with hematospermia. Of these men, 51 had benign or hemorrhagic lesion involving the seminal vesicle, ejaculatory duct, or prostate. Only one case of prostate cancer was identified (13).

Ninety adult patients aged between 23 and 71 years (mean age 41 years) presenting with hematospermia underwent evaluation with endorectal coil MRI at 1.5 T. Duration of hematospermia ranged between 5 days and 4 years (mean 15 months). MRI examination including T1-weighted spin-echo (SE) and T2-weighted fast SE MR images were obtained in the sagittal, coronal, and axial planes. Abnormalities were observed on endorectal-coil MR images in 49 of 90 patients (54%). Blood within the seminal vesicle or the ejaculatory duct was recognized in 23 of 90 patients (25%). Dilatation of the seminal vesicles or the ejaculatory duct was...
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The largest case series from a University Urology Department in Guangzhou, China involved 270 patients aged 15 to 75 years. Patients had experienced hematospermia for a mean of 3.4 months (range: one day to eight years). All patients underwent trans-rectal ultrasound and 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. Eight of 126 patients (6.3%) over 40 had cancer (prostate in 5, seminal vesicles in 2 and bladder cancer in one patient) (17).

The largest case series with the longest follow-up involved 150 with hematospermia, who were followed for 5 to 23 years. Age ranged from 20 to 74; most were between ages 40 and 70. Approximately 85% of men had multiple episodes of hematospermia. Most underwent a urological workup that was standard at the time, including digital rectal examination (DRE), cystoscopy, and kidney, ureter, and bladder (KUB) radiographs.

These studies were negative in 63%. In the remainder, a variety of minor abnormalities were detected, including benign prostatic hypertrophy (17%), prostatic calculi (7%), and abnormal veins (8%). It was not certain whether any of these abnormalities caused the bleeding or if they were simply coincidental problems.

Prostate cancer developed in only 4% and bladder cancer in one man. It is possible that these few cases of cancer were related to the initial complaint of hematospermia, but they may also have been incidental cases related to the expected rate of such cancers among men as they age (18).

The pathophysiologic explanation proposed that infection first stimulates thickening of the wall which leads to a stricture that aggravates the infection due to impaired drainage. In some cases, infection and stricture also contribute to the formation of calculi, and conversely the calculi also cause obstruction and frequent recurrence of infection (16). In brief, stricture, infection and calculi create a vicious cycle that induces an infection that cannot be improved or eradicated despite the use of antibiotics and finally results in persistence or recurrent hematospermia.

In conclusion, hematospermia has been attributed to a variety of pathologic processes, such as: inflammation and infections, ductal obstruction and cysts, tumors, vascular abnormalities, systemic and iatrogenic factors. Non-invasive imaging may play an important role in the diagnostic workup, particularly in subjects who have persistence of hematospermia.

Trans-rectal ultrasonography (TRUS) may help in the diagnosis of prostatic and seminal vesicle pathology, but the procedure may be stressful for adolescents. MRI may be helpful in assessing the level at which hemorrhage occurs and in defining the cause of the disease. In experienced hands and selected cases, transurethral seminal vesiculoscopy may prove feasible and effective method in the diagnosis and treatment of persistent hematospermia, with minimal reported complications (19).

Treatment should be tailored to the cause. Primary or isolated hemospermia is often self-limiting. Infection and inflammatory pathology of the lower seminal tract, which is often the most frequent underlying pathology, should be treated with appropriate

observed in 31 of 90 patients (34%). Cystic lesions were identified in 14 cases, eight of which involved the uricles and six the ejaculatory duct. Calculi within the seminal vesicles were depicted in seven patients. No malignant disease was demonstrated (14).

Furuya et al. (15) studied 26 patients with hematospermia who showed high-intensity signals on T1-weighted images with or without low-intensity signals on T2-weighted images, suggesting seminal vesicle hemorrhage. They aspirated the seminal vesicles to confirm hemorrhage. Bloody fluid was aspirated from all seminal vesicles confirming the pattern suggestive of bleeding on MRI. The morphologic analysis of red blood cells in the fluid differentiated two types of hemorrhage. Fresh hemorrhage in the seminal vesicles was represented by presence of high-intensity signals on T1-weighted images and low-intensity signals on T2-weighted images (group A). Whereas old hemorrhage was identified by finding of high-intensity signals on T1-weighted images as well as T2-weighted images (group B). In 3 patients of group A, who did not receive aspiration, repeated MRI during follow-up showed that signal intensity changed from low to high on T2-weighted images. On the other hand, in 2 patients in group B who received aspiration, repeated MRI performed 12 and 7 days after aspiration showed low signal intensity on T2-weighted images. Accordingly, hemorrhage is present in the seminal vesicles if high signal intensity is observed on T1-weighted images. Low and high signal intensities on T2-weighted images suggest relatively fresh and old bleeding, respectively (15).

In our patient the etiology of the abnormal hyper-intensity of the right SV remains unknown. In a 15-year-old male adolescent, a relationship was postulated between hematospermia and "some vascular phenomena accompanying the pubertal reproductive development" (7).

To address this complex condition in adult patients, Liu et al. (14) attempted to use a transurethral seminal vesiculoscopy. They investigated 72 patients (age ranged between 21 and 76 years, with a mean age of 48.8 years) for a mean follow-up period of 21.7 months. In 67 patients, significant inflammatory mucosal edema, congestion and inflammatory hemorrhages were found. These symptoms were seen in only one SV in 58.3% (42/72) of patients and in both vesicles in 34.7% (25/72) of patients. Stricture or obstruction at the level of the verumontanum orifice or stenosis of the ejaculatory duct was also found in those patients. Calculi were present in one or both seminal vesicles and in the verumontanum lumen in 24 patients (33.3%). Biopsy specimens from the 67 patients revealed inflammation with no evidence of malignancy or hypertrophy. Postoperative complications, such as epididymitis, retrograde ejaculation, urinary incontinence or rectal injury, were not reported (16).

The authors speculated that obstruction or stricture at the level of the verumontanum orifice or stenosis of the ejaculatory duct may be the basic pathophysiology of persistent or recurrent hematospermia (Figure 1).

The largest case series from a University Urology Department in

Rivista Italiana di Medicina dell'Adolescenza

Volume 14, n. 2, 2016
antibiotics. Where radiological imaging reveals structural abnormality surgical correction should be performed especially in cases of persistent and or recurrent hematospermia. In the rare event of a systemic cause for haematospermia, appropriate speciality referral will have to be made.

References


Disclosure of conflict of interest
None to declare

Correspondence:
Vincenzo de Sanctis, MD
Pediatric and Adolescent Outpatient Clinic
Quisisana Private Accredited Hospital
Viale Cavour, 128 - Ferrara (Italy)
Phone: 0532 207622
E-mail: vdesanctis@libero.it