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Transrectal ultrasound in patients with hematospermia

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KEYWORDS
Hematospermia;
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Abstract *Introduction:* To illustrate the lesions detected with transrectal ultrasound (TRUS) in patients with hematospermia.
Material and methods: This study included 74 male patients (25—73 years old) affected by hematospermia. Clinical history was obtained and all patients underwent rectal examination as well as TRUS examination in both axial and coronal planes to evaluate the prostate, ejaculatory ducts and seminal vesicles. Biopsy was performed in 10 patients.
Results: Abnormalities were detected in 59 patients. Calculi ($n = 20$) were seen within the prostate, seminal vesicles and along the course of the ejaculatory ducts. Chronic prostatitis ($n = 14$) appeared as hyperechoic and hypoechoic areas within the prostate with capsule thickening suggesting seminal vesiculitis ($n = 8$). Granulomatous prostatitis ($n = 3$) appeared as hyperechoic and calcified areas scattered within the prostate and the seminal vesicles. Hypoechoic focal lesions and heterogeneous texture were seen in prostate cancer ($n = 5$). Utricular cysts (n = 3) appeared as small midline lesions, and Mullerian duct cysts ($n = 8$) appeared as larger midline cysts protruding above the prostate. Ejaculatory duct cysts ($n = 4$) appeared as thick walled cystic lesions along the course of the ejaculatory duct. Seminal vesicle cysts were detected in 2 patients.
Conclusion: Our conclusion is that TRUS is a safe, non-invasive technique which can be used to detect lesions of the prostate, seminal vesicles and the ejaculatory ducts in patients with hematospermia.

Sommario *Introduzione:* Illustrare le lesioni identificate con ecografia prostatica transrettale in pazienti con ematospermia.
Materiali e metodi: Il presente studio include 74 pazienti di sesso maschile (25—73 anni) con ematospermia. Tutti i pazienti successivamente sono stati sottoposti a esame ecografico prostatico transrettale sui piani assiale e coronale della prostata, dei dotti eiaculatori e delle vescichette seminali dopo aver effettuato l'anamnesi e l'esplorazione rettale. La biopsia è stata effettuata in 10 pazienti.

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Risultati: In 59 pazienti sono stati identificati reperti patologici. Calcoli ($n = 20$) sono stati identificati entro il parenchima ghiandolare prostatico, nelle vescichette seminali e lungo il decorso dei dotti eiaculatori. La prostatite cronica ($n = 14$) si presentava con un'immagine iperecogena con aree ipoecogene del parenchima ghiandolare con ispessimento della capsula che si associava con vesciculite seminale ($n = 8$). La prostatite granulomatosa ($n = 3$) appariva iperecogena con alcune regioni calcifiche distribuite nella prostata e nelle vescichette seminali. Nei casi di tumore della prostata sono stati identificate lesioni focali ipoecogene e ecostruttura eterogenea ($n = 5$). La cisti utriculare ($n = 3$) era una lesione della linea mediana e le cisti dei Dotti Mulleriani ($n = 8$) apparivano come una cisti della linea centrale più grande che protrudeva sopra la prostata. Le cisti dei dotti eiaculatori ($n = 4$) apparivano come lesioni con pareti ispessite lungo il decorso del dotto eiaculatorio e le cisti vescicali sono state identificate in 2 pazienti.
Conclusioni: Concludiamo che l'ecografia transrettale è una tecnica non invasiva che può essere usata per identificare lesioni della prostata, delle vescichette seminali e dei dotti eiaculatori in pazienti con ematospermia.

Introduction

Hematospermia represents 1% of all andrological and urological symptoms. The international nomenclature of human semen parameters defines hematospermia as the presence of fresh or altered blood in the ejaculate that appears brown. There are several reasons why hematospermia may occur. It may be caused by inflammation, neoplastic formations or obstructive cystic lesions along the course of the ejaculatory ducts, and it may also be idiopathic. Differentiation between the different causes is extremely important in order to plan adequate treatment in these patients. Hematospermia is mainly of inflammatory origin in young patients, but in older patients, it is usually due to a benign or malignant prostatic tumor [1—4].

Non-invasive imaging is essential in the diagnostic work-up of men with hematospermia. Different imaging modalities have been used in the diagnosis. CT scan is not helpful due to poor visualization of the distal duct system [4]. MR imaging using an endorectal coil can depict the distal duct system, but it is expensive [5—7]. Transrectal ultrasound (TRUS) is more accurate in the visualization of the distal duct system and the various abnormalities that can provide diagnosis and etiological factors of hematospermia [8—12].

The aim of this work is to illustrate the lesions which were detected using TRUS in patients with hematospermia.

Material and methods

This study included 74 male patients aged from 25—73 years (mean age = 36) who complained of recurrent hematospermia over the past 2—15 months (mean = 8 months). A thorough clinical history was obtained and all patients underwent rectal examination of the prostate and seminal vesicle for swellings, nodules, and tenderness. Laboratory tests were expressed prostatic secretions (EPS) and semen analysis. Semen was tested for peroxidase-positive white blood cells (WBCs), fructose level and for bacterial cultures using suitably prepared semen dilutions. Prostatic specific antigen (PSA) was evaluated in 10 patients. The study was performed according to the ethical principles for medical research contained in the declaration of Helsinki, and informed consent was obtained from all patients.

TRUS examination was performed (AU5, Esaote Biomedica, Italy) using a high frequency (7.5 MHz) bi-plane endorectal probe. All examinations were carried out by a radiologist with 15 years' experience in TRUS examinations. Patients were instructed to self-administer a cleansing enema the night before the examination. Examination was performed with the bladder half-full and the patient in left lateral decubitus position and the hips fully flexed. The prostate, ejaculatory ducts and seminal vesicles were examined in axial and sagittal planes. TRUS guided biopsy was performed in 10 patients who had elevated PSA value. Core biopsy was performed after positioning of an insertion needle (14G-140 mm, Biomedical, Florence, Italy) using an automatic biopsy pistol (guillotine-type Biomedical, Florence, Italy). After biopsy, the patient was administered antibiotic prophylaxis: ciprofloxacin 500 mg per day for 3 days. Final diagnosis was made on the basis of typical sonographic appearance and site of calculi and cystic lesions. Chronic prostatitis was confirmed by pus cells in the semen analysis and EPS. Prostate cancer and tuberculous prostatitis were confirmed by TRUS guided biopsy.

Results

The following causes of hematospermia were revealed: calculi within the prostate, ejaculatory ducts and seminal vesicles ($n = 20$); chronic prostatitis ($n = 14$) associated with seminal vesiculitis ($n = 8$); granulomatous prostatitis ($n = 3$); prostate cancer ($n = 5$); cystic lesions located at the midline ($n = 11$), in paramedian location along the course of the ejaculatory duct ($n = 4$) or in the seminal vesicle ($n = 2$). In 15 patients TRUS revealed no abnormality.

Calculi appeared as bright echogenic foci with posterior acoustic shadows within the prostate ($n = 13$), the ejaculatory ducts ($n = 7$) and in the seminal vesicle ($n = 3$). Calculi were either diffuse or segmental (Fig. 1). They were associated with increased wall thickness of the ejaculatory duct in 6 patients.

Chronic prostatitis appeared as multiple hyperechoic areas associated with hypoechoic areas scattered within