# Sonographic Evaluation of the Intrascrotal Disease

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***Purpose :*** *To determine the causes of intrascrotal disease in patients who were sent for scrotal sonography at King Chulalongkorn Memorial Hospital and whether the imaging findings can help differentiate the tumor from infection of the testis.*
***Material and Method :*** *Retrospective review was performed in 72 cases of extratesticular lesions and 48 cases of the intratesticular lesions to find out the causes of intrascrotal disease. The sonographic findings in the cases with final diagnosis of intratesticular infection and testicular tumor were analyzed according to the following criteria including the size of the testis, number, echogenicity, and margin of the mass, diffuse abnormal echogenicity of the testis, presence of fluid in the scrotal sac, epididymal lesion, scrotal skin thickening and calcification.*
***Results :*** *Hydrocele was the most common extratesticular lesion (29.87%) and epididymitis was the second most common (14.28%). Infection was the most common intratesticular pathology (54.17%) and tumor was the second most common (31.25%). Most testicular tumors appeared as a focal mass while testicular infection usually caused diffuse abnormal echogenicity throughout the testis (p = 0.008). Epididymal lesions and skin thickening were usually detected together with intratesticular infection while they were not present in the cases of tumor (p = 0.000061 and 0.017). The number, echogenicity, margin of the mass, presence of testicular enlargement, fluid in the scrotal sac and calcification did not differ between testicular infection and tumor.*
***Conclusion :*** *Hydrocele was the most common cause of extratesticular disease, followed by epididymitis. Most of the extratesticular pathology was benign entities. For intratesticular disease, the most common cause was infection, followed by intratesticular tumor. Findings of a solitary intratesticular mass without epididymal lesion or skin thickening prefered malignant entity, while diffuse abnormal echogenicity of the testis with epididymal lesion and skin thickening prefered infectious process.*

***Keywords :*** *Scrotal sonography, Scrotal disease, Testicular lesions*

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Ultrasonography (US) is a good imaging modality for detecting intrascrotal disease. It is a simple and painless method to visualize intrascrotal contents without the use of ionizing radiation. Current usues of scrotal sonography include evaluation of scrotal mass, scrotal trauma or acute scrotum; detection of an occult primary tumor in patients with known metastatic disease; follow-up of patients with testicular microlithiasis; localization of undescended testis; detection of varicocele in infertile men; and treatment follow-up [1].

It is widely accepted that the ultrasound is highly effective in differentiating intratesticular and extra-testicular lesions. Using high-resolution real-time equipment, Rifkin MD et al reported accurate detection of abnormal scrotal content in 98.5% of cases and accuracy for separation of testicular from extratesticular pathology of 99% [2].

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Of intrascrotal disease, the extratesticular lesion is more common than intratesticular lesion. Extratesticular disease usually is benign pathology such as hydrocele, epididymitis, varicocele, and hernia. Extratesticular tumor is rarely found. On the other hand, the majority of intratesticular lesions are malignant [1]. Micallef M et al reviewed sonographic examination in patients who underwent ultrasound for indication of scrotal swelling. The cause of scrotal swelling was mainly extratesticular (75%) and hydrocele was the most common. Of the intratesticular causes, infection (50.8%) and tumor (20.6%) were the most common [3].

Differentiating benign from a malignant intratesticular lesion can cause a problem in some situations. There are no definite reliable sonographic criteria to distinguish testicular neoplasms from focal benign testicular lesions such as infection, infarction, or hemorrhage. From the study of Rifkin, all malignant testicular tumors could be identified by ultrasound, but there were some cases which could not be differentiated from benign

lesions prior to surgery [2].

The purposes of this study were to determine the causes of intrascrotal disease in patients who were sent for scrotal ultrasound at King Chulalongkorn Memorial Hospital and whether the imaging findings could help differentiate tumor from infection of the testis, which are the two common causes of intratesticular lesion.

**Material and Method**

From January 1999 to June 2002, 183 scrotal sonographic examinations were performed at the authors' Institution. 23 (12.57%) ultrasound with indication of undescended testis were excluded from the study. Of the remaining 160 examinations, 156 studies had the images available and were the subject for the present study. The study group of boys and men had an average age of 40.97 years (range 3 days-85 years). The scrotal examinations were performed according to the indication of scrotal swelling or palpable intrascrotal mass130 cases (83.3%), scrotal pain alone 12 cases (7.69%), searching for primary tumor 7 cases (4.49%), small size of testis 2 cases (1.28%), follow up after surgery 2 cases (1.28%), and scrotal discharge 1 case (0.64%). Retrospective review of the initial reports of these examinations was done. In this the present study, sonographic findings were determined from the original reports.

The patients were divided into two groups on the basis of the presence of intra- or extra-testicular lesion. All the cases of both intratesticular and extratesticular disease in the same srotum were assigned to the group of intratesticular disease.

Medical records of the patients with intratesticular lesion were reviewed to find out the final diagnosis. All cases of malignant intratesticular disease were confirmed pathologically by orchiectomy. Cases of intratesticular infection were diagnosed by clinical improvement after antibiotic therapy, and 3 cases underwent orchiectomy with tissue diagnosis.

Furthermore, the authors analysed the sonographic findings of intratesticular infection and testicular tumor according to the following criteria including size, number, echogenicity, and margin of the mass. Cases with diffuse abnormal echogenicity of the testis and without a definite mass were defined as diffuse involvement. If mass and heterogenecity were described in the same patient, the abnormality was categorized as a mass. Presence of fluid in the scrotal sac, epididymal lesion, scrotal skin thickening and calcification within the mass were also recorded.

All sonographic procedures were performed with a 7 MHz linear-array transducer. Color Doppler ultrasound was performed in questionable cases. Frequency of the occurrence of each sonographic signs as criterion of testicular tumor or infection was evaluated. Statistical analysis for comparison of testicular tumor and infection was performed by using the Fisher's exact test. Probability values less than 0.05 were considered statistically significant.

**Results**

From the imaging findings, there were 36 cases (23.08%) of normal sonographic findings (normal size of the testis, no intratesticular mass or abnormal echogenicity, or minimal fluid in the scrotal sac assumed to be normal finding). 72 cases (46.15%) had extratesticular lesions without intratesticular abnormality and 48 cases (30.77%) had intratesticular lesions.

From 72 cases of extratesticular lesion, imaging findings were classified as follow: hydrocele 23 cases, epididymitis 11 cases, epididymal cyst 9 cases, complicated hydrocele 6 cases, epididymitis with hydrocele 4 cases, hernia 4 cases, varicocele 4 cases, extratesticular tumor 4 cases, abscess in the scrotal sac 3 cases, nodule in the scrotal sac 3 cases, hematoma 2 cases, spermatocele 2 cases, dilated efferent duct 1 case, and scrotal sac cyst 1 case (Table 1).

There were 5 cases with combined lesions in the bilateral scrotal sacs. The first case had right epididymitis with hydrocele and left epididymal cyst. The second case had right epididymal cyst and left hydrocele. The third case had right epididymal cyst and left hernia. The fourth case had right hernia and bilateral hydrocele. The last case had bilateral hydrocele and hernia.

From 48 cases of intratesticular lesion, imaging diagnosis were classified as infection/inflammation 26 cases, including orchitis/epididymo-orchitis 24 cases and orchitis with abscess 2 cases, tumor 15 casess, hematoma 2 cases, microlithiasis 2 cases, small size of the testis 2 cases, and intratesticular cyst 1 case (Table 2).

From the medical record review of 26 cases of testicular infection/inflammation, 2 cases had sonographic findings suggestive of abscess. One of the two had the final diagnosis of tuberculous testis due to positive AFB stain of the scrotal discharge. The other case was improved with antibiotic treatment and its final diagnosis was orchitis.

In the remaining 24 cases of orchitis/epididymo-orchitis, 12 patients were improved after medical treatment. 3 cases had a final diagnosis of tuberculosis.

**Table 1.** Imaging diagnosis of extratesticular lesion

| Extratesticular lesion | Number (%) |
|---|---|
| Hydrocele | 23 (29.87) |
| Epididymitis | 11 (14.28) |
| Epididymal cyst | 9 (11.69) |
| Complicated hydrocele | 6 (7.79) |
| Epididymitis with hydrocele | 4 (5.19) |
| Varicocele | 4 (5.19) |
| Extratesticular tumor | 4 (5.19) |
| Hernia | 4 (5.19) |
| Abscess | 3 (3.9) |
| Nodule in scrotal sac | 3 (3.9) |
| Spermatocele | 2 (2.6) |
| Hematoma | 2 (2.6) |
| Dilatation of efferent duct | 1 (1.3) |
| Scrotal sac cyst | 1 (1.3) |

**Table 2.** Imaging diagnosis of intratesticular lesions

| Intratesticular lesion | Number (%) |
|---|---|
| Infection/inflammation | |
| - Orchitis/epididymo - orchitis | 24 (50.00) |
| - Orchitis with intratesticular abscess | 2 (4.17) |
| Tumor | 14 (31.25) |
| Hematoma | 2 (4.17) |
| Microlithiasis | 2 (4.17) |
| Small size of testis | 2 (4.17) |
| Intratesticular cyst | 1 (2.08) |

One of them was diagnosed by pathologic diagnosis of granulomatous orchitis. Another patient was diagnosed by positive AFB stain of the pus from the scrotum. In the third patient, pulmonary tuberculosis was also found and was improved after medical therapy. There were 2 cases that were not improved after antibiotic treatment. Surgical drainage was done in both cases. The first case received surgical drainage 4 days after ultrasound examination and followed by orchiectomy 9 days later in which acute orchitis with abscess was discovered. The other patient received surgical drainage 2 days after sonography. Radical orchiectomy was performed in 1 case with a history suggestive of chronic tortion. Its pathologic study revealed testicular infarction. There were 6 cases with no medical records available.

From 15 cases of testicular tumor,10 cases underwent radical orchiectomy. 8 cases had a final diagnosis of malignant tumor including 3 cases of seminoma, 4 cases of lymphoma, and 1 case of malignant germ cell tumor. There were 2 cases with pathologic diagnosis of testicular atrophy in one and tuberculous testis in the other.

One case had CT scan after ultrasound examination and only hydrocele without testicular mass was found. Hydrocelectomy was done after that. Transinguinal exploration of the right testis was done in one case and discovered only epididymitis. 1 case was improved with antibiotic treatment and was finally diagnosed as orchitis. The remaining 2 cases had no medical records available.

In the 2 cases of hematoma, one had a history of right scrotal swelling after trauma and the other had a history of prior left epididymectomy. No further management was done in these cases. Two cases of small testicular size had a final diagnosis of testicular atrophy and received no further management. 2 cases of microlithiasis and 1 case of testicular cyst also had no further management.

From the medical record review of the group of intratesticular lesion, there were 8 cases of proved malignant testicular tumor and 21 cases of testicular infection. The imaging characteristics of each group were reviewed.

There were 10 ultrasound images of 8 patients with testicular tumor (2 patients had tumor in both testes), and 24 ultrasound images from 21 patients of testicular infection (3 patients had lesions in both testes). The imaging findings are shown in Table 3 and 4.

Nine from 10 cases of testicular tumor presented with focal mass (90%), while 15 from 24 cases of testicular infection presented with diffuse testicular

**Table 3.** Sonographic features of testicular tumor and infection

| Ultrasound features | Number | | *p* |
|---|---|---|---|
| | Tumor (n=10) | Infection (n=24) | |
| Appearance of lesion | | | |
| - Mass | 9 (90%) | 9 (37.5%) | 0.008 |
| - Diffuse enlargement | 1 (10%) | 15 (62.5%) | |
| Enlargement of testis | | | |
| - Presence | 8 (80%) | 17 (70.83%) | not |
| - Absence | 2 (20%) | 7 (29.17%) | significant |
| Fluid in scrotal sac | | | |
| - Presence | 3 (30%) | 13 (54.17%) | not |
| - Absence | 7 (70%) | 11 (45.83%) | significant |
| Epididymal lesion | | | |
| - Presence | 0 (0%) | 18 (75.0%) | 0.000061 |
| - Absence | 10(100%) | 6 (25.0%) | |
| Skin thickening | | | |
| - Presence | 0 (0%) | 10 (41.67%) | 0.017 |
| - Absence | 10 (100%) | 14 (58.33%) | |
| Calcification | | | |
| - Presence | 1 (10%) | 1 (4.17%) | not |
| - Absence | 9 (90%) | 23 (95.83%) | significant |

**Table 4.** Sonographic features of mass lesion

| Ultrasound features | Number | | *p* |
|---|---|---|---|
| | Tumor (n = 9) | Infection (n = 9) | |
| Number | | | |
| - Solitary | 7 (77.78%) | 4 (44.44%) | not significant |
| - Multiple | 2 (22.22%) | 5 (55.56%) | |
| Echogenicity | | | |
| - Homogeneous | 5 (55.56%) | 7 (77.78%) | not significant |
| - Heterogeneous | 4 (44.44%) | 2 (22.22%) | |
| Margin | | | |
| - Well-defined | 5 (55.56%) | 3 (33.33%) | not significant |
| - Poorly defined | 4 (44.44%) | 6 (66.67%) | |

involvement (62.5%) and appeared as abnormal echogenicity throughout the testis ($p$=0.008). When evaluating the mass lesion, no statistically significant difference was noted with respect to number of masses, echogenicity or appearance of margin.

Epididymal lesion was found in 18 from 24 cases of testicular infection (75%), while it was not demonstrated in the case of tumor ($p$ = 0.000061). Skin thickening was seen in 10 cases of testicular infection (41.67%), and was not found in the cases of tumor ($p$ = 0.017), (Fig. 1-4).

Testicular enlargement was found in 8 cases of testicular tumor (80%) and 17 cases of testicular infection (70.83%). Fluid in the scrotal sac was detected in 3 cases of testicular tumor (30%) and 13 cases of testicular infection (54.17%). Calcification was found in 1 case of each group. No statistically significant difference was noted between testicular tumor and


**Fig. 1** A 37 year old man presented with a right testicular mass. Scrotal ultrasound shows an inhomogeneous mass (↑) in the right testis with minimal fluid (*) in the scrotal sac. The right epididymis and skin were normal. Right orchiectomy was done. Pathologic study revealed seminoma

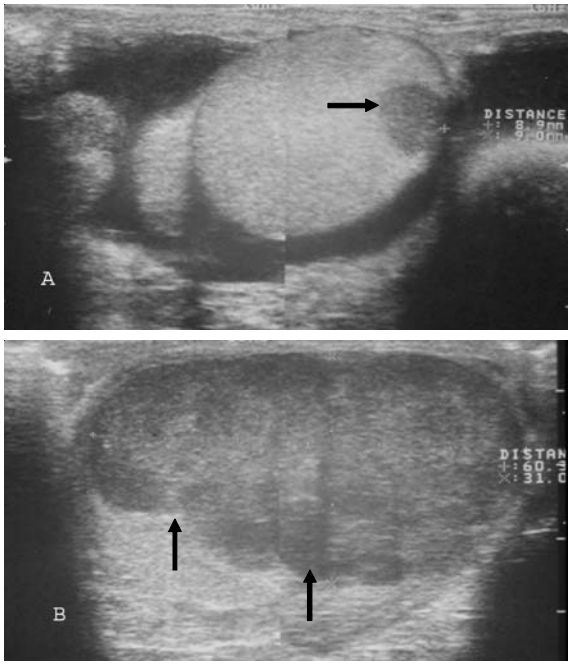



**Fig. 2** A 70 year old man presented with a left testicular mass. (A) Scrotal ultrasound shows normal size of the right testis with a 1 cm well-defined hypoechoic mass (↑). (B) Enlarged left testis with a lobulated hypoechoic mass (↑↑) was noted. Minimal fluid in the scrotal sac was observed. The epididymis and covering skin were normal bilaterally. Pathologic study revealed non-Hodgkin lymphoma

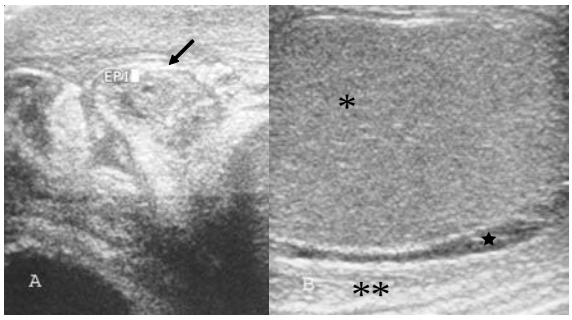



**Fig. 3** A 24 year old man presented with fever and right scrotal swelling for 2 days. (A) Scrotal ultrasound shows an enlarged right epididymis with inhomogeneous echogenicity (↑). (B) Enlarged right testis with slightly decreased echogenicity (*) is noted. Thickened skin (**) and minimal fluid (★) in the right scrotal sac are seen. Final diagnosis was right epididymo-orchitis

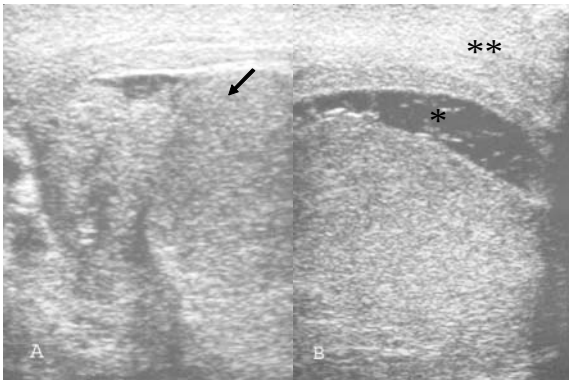
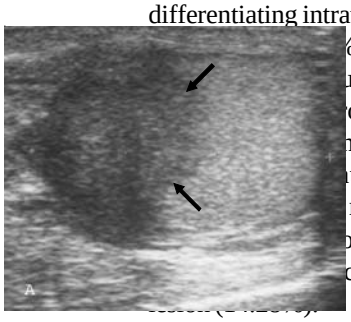



**Fig. 4** A 37 year old man presented with fever and right scrotal pain. (A) Enlarged right epididymis and testis with an ill-defined low echoic mass (↑) in the testis adjacent to the epididymis is noted. (B) Minimal fluid (*) and thickened skin (**) are seen. Final diagnosis was epididymo-orchitis

infection in terms of presence or absence of testicular enlargement, fluid in the scrotal sac or calcification.

## Discussion

Sonography becomes more important in the evaluation of scrotal lesion. Because accuracy of differentiating intratesticular and extratesticular patho-% [2], the decision whether the lesion ular or extratesticular compartment oblem. Extratesticular lesions are the intratesticular ones [4], and are thology [1]. In the present study, most common (29.87%), which is ous report by Micallef et al [3]. Epidi-cond most common extratesticular




Most of the extratesticular lesions found in the present study were benign disease such as hydrocele, epididymitis, epididymal cyst, and varicocele. Diagnosis of these diseases does not cause any problem in the clinical practice, because most of them have characteristic ultrasound findings. The authors separated simple hydrocele and complicated hydrocele into different entities because the findings were not quite similar.

On the other hand, there was more difficulty in giving a correct imaging diagnosis in the case of intratesticular lesion. Two groups of intratesticular disease that are commonly found are infection and tumor [3]. In the present study, infection was the most common intratesticular pathology (54.17%). Testicular tumor was the second commonest (31.25%). Percentage of disease in the present study was close to the report of Micallef et al [3].

In the past, Robertson GS el al reviewed the records of 149 patients who underwent testicular exploration for suspected malignancy. He found that ultrasonography had a sensitivity of 100% for malignancy but specificity of only 36%. From his study, there were 47 patients who had benign pathology and underwent unnecessary surgery [5]. The authors had 2 cases of sonographic diagnosis of intratesticular tumor and underwent orchiectomy with the pathologic study revealing benign lesions; tuberculus testis in one and testicular atrophy in another (Fig. 5).

Ultrasound findings of testicular infection and tumor can be indistinguished. However, there are some ultrasound findings that differ between the two groups. The present study showed statistically significant difference between testicular tumor and infection in some sonographic findings. The authors found that most of the testicular tumor appeared as a focal mass, while infection usually caused diffuse abnormal echogenicity throughout the testis.

When looking for epididymal lesions, the authors found that they are usually detected together with intratesticular infection, while there is no epididymal involvement in the cases of tumor. Findings of skin thickening also give a similar pattern. They may be found in the cases of infection while there is no skin thickening in the cases of tumor. Findings in the present study are similar to those reported by Arger et al which showed no enlarged epididymis or skin thickening with testicular tumor [6].

In patients with acute infection, the epididymis is commonly involved. Infection is most likely to be retrograde spreading from the urinary bladder or prostate gland via the urethra to the vas deferens [7]. Sonographic findings in acute epididymitis are epidi-


**Fig. 5** A 45 year old man presented with a left testicular mass. (A) scrotal ultrasound shows hypoechoic mass (↑↑) in the superior part of the left testis. (B) Enlarged epididymis with low echogenicity (↑↑↑) is noted. Malignant tumor was suggested and orchiectomy was done. Pathologic study revealed caseous granuloma and final diagnosis was tuberculous orchitis

dymal enlargement, hypoechoic texture of the epididymis, hydrocele, and scrotal skin thickening [7]. In most cases, infection of the testis is secondary to direct extension of adjacent epididymitis. Orchitis may occur from hematogenous or lymphatic dissemination, but may rarely occur in the absence of epididymal involvement. Once infected, the testis is usually diffusely involved.

Testicular tumor with epididymal involvement is uncommon. Dry et al reviewed a pathological study in 142 cases of germ cell tumor and found that 16.2% had extratesticular extension. There were only 2 cases of tumor in the epididymis. Penetration of the tunica albuninea was not identified in any case [8]. Skin involvement occurs late in the disease, classified as T4 in TNM staging system [9]. In differentiation of malignant from benign intratesticular lesion, skin thickening and a large amount of peritesticular fluid suggest a nontumorous lesion [6]. Furthermore, a tumor is not usually associated with epididymal enlargement unless there is direct invasion of the tumor.

In the present study, both infection and tumor can cause enlargement of the testis. Fluid in the scrotal sac also can be seen in both groups. small amount of hydrocele occured in 60% of patient with testicular tumor, but a large amount of fluid is uncommon [1]. In the case of infection, some reactive fluid may be detected. Therefore, findings of testicular enlargement and hydrocele are not helpful in differentiating infection from tumor of the testis.

In some instances, focal orchitis may occur. The typical sonographic pattern of focal orchitis includes focal, peripheral and hypoechoic intratesticular lesion with a poorly defined margin, crescent-shaped and adjacent to an enlarged epididymis [10]. Findings of a poorly defined margin and an enlarged epididymis are helpful in distinguishing infection from tumor. However, a malignant tumor with epididymal involvement can occur even in small number of cases, and margin of the mass is not a helpful finding. In this difficult case, follow up is recommended. If there is no improvement after 2-4 weeks of antibiotic treatment, tumor should be considered [10].

With the advent of color Doppler ultrasonography, it has been found that color Doppler ultrasonnd cannot help in differentiating neoplasm from acute inflammation, since both of them can be hypervascularity [7]. In the present study, the authors did not include findings from color Doppler ultrasound.

The present study has several limitatations. First, this is a retrospective analysis with a small study population. Second, most of the infectious cases were not confirmed pathologically, but the authors assumed that there was infection in the testis because of clinical improvement after antibiotic therapy.

In conclusion, for patients with extratesticular disease, hydrocele is the most common finding, followed by epididymitis. Most of the extracellular pathology is in the benign entities. For intratesticular disease, the most common disease is infection, followed by intratesticular tumor. Findings of solitary intratesticular mass without epididymal lesion or skin thickening prefer malignant entity, while diffuse abnormal echogenicity of the testis with epididymal lesion and skin thickening prefer an infectious process. However, some findings may overlap between the two groups making difficulty in giving correct ultrasound diagnosis. Follow-up with ultrasound may be helpful in these cases.

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## การวินิจฉัยโรคในถุงอัณฑะโดยอุลตราซาวด์

**เกียรติ อาจหาญศิริ, นิศารัตน์ วิเศษ, วีรนุช กิจสุขจิต**

***วัตถุประสงค์*** *: เพื่อหาสาเหตุของโรคในถุงอัณฑะในผู้ป่วยที่ถูกส่งตรวจอุลตราซาวด์ของถุงอัณฑะและพิจารณาผลการตรวจว่าสามารถให้การวินิจฉัยแยกโรคระหว่างภาวะเนื้องอกและการติดเชื้อของอัณฑะได้หรือไม่*

***สถานที่ทำการศึกษา*** *: หน่วยอุลตราซาวด์ สาขารังสีวิทยาวินิจฉัย ภาควิชารังสีวิทยา คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย*

***รูปแบบของการศึกษา*** *: การวิจัยเชิงพรรณนา*

***วัสดุและวิธีการ*** *: ทำการทบทวนผลการตรวจอุลตราซาวด์ในกลุ่มพยาธิสภาพที่อยู่ภายนอกอัณฑะ 72 รายและกลุ่มพยาธิสภาพที่อยู่ภายในอัณฑะ 48 ราย กำหนดเงื่อนไขในการวินิจฉัย ภาวะเนื้องอกและการติดเชื้อของอัณฑะดังต่อไปนี้ ขนาดของอัณฑะ จำนวนพยาธิสภาพ ลักษณะภาพสะท้อนของคลื่นเสียง ขอบเขตของพยาธิสภาพ การมีน้ำในถุงอัณฑะ พยาธิสภาพในเอพิดิไดมิส การหนาตัวของผนังถุงอัณฑะ และการเกิดหินปูนในพยาธิสภาพ*

***ผลการศึกษา*** *: โรคกลอนน้ำ (การมีน้ำขังในถุงอัณฑะ) พบบ่อยที่สุดในกลุ่มพยาธิสภาพที่อยู่นอกอัณฑะ (29.87%) การอักเสบของเอพิดิไดมิสพบรองลงมา (14.28%) ภาวะติดเชื้อพบบ่อยที่สุดในกลุ่มพยาธิสภาพที่อยู่ในอัณฑะ (54.17%) เนื้องอกพบรองลงมา (31.25%) ส่วนใหญ่ของเนื้องอกในอัณฑะจะปรากฏลักษณะเป็นก้อนที่มีขอบเขต ส่วนภาวะติดเชื้อของอัณฑะมักจะมีลักษณะความผิดปกติของภาพสะท้อนของคลื่นเสียงที่แพร่กระจายทั่ว ๆ ไป ($p = 0.008$) พยาธิสภาพในเอพิดิไดมิสและการหนาตัวของผนังถุงอัณฑะจะพบร่วมกับภาวะติดเชื้อของอัณฑะได้บ่อย แต่จะไม่พบในรายของเนื้องอกในอัณฑะ ($p = 0.000061$ และ $0.017$) การศึกษาพบว่าจำนวนของพยาธิสภาพ ลักษณะภาพการสะท้อนของคลื่นเสียง ขอบเขตของเนื้องอก ขนาดของอัณฑะที่โตขึ้น น้ำในถุงอัณฑะ และการปรากฏของหินปูน ไม่มีความแตกต่างกันระหว่างภาวะติดเชื้อและเนื้องอก*

***สรุป*** *: โรคกลอนน้ำเป็นพยาธิสภาพภายนอกอัณฑะที่พบบ่อยที่สุด รองลงมาคือการอักเสบของเอพิดิไดมิส ส่วนใหญ่ของพยาธิสภาพที่อยู่ภายนอกอัณฑะมักเป็นชนิดไม่ร้ายแรง ในส่วนของพยาธิสภาพที่อยู่ภายในอัณฑะพบว่าภาวะการติดเชื้อเป็นสาเหตุที่พบบ่อยที่สุด รองลงมาคือเนื้องอก การตรวจพบเพียงเนื้องอกก้อนเดี่ยว ๆ ภายในอัณฑะโดยปราศจากพยาธิสภาพที่เอพิดิไดมิส หรือ การหนาตัวของผนังถุงอัณฑะร่วมด้วยจะโน้มเอียงไปทางพยาธิสภาพชนิดร้ายแรงมากกว่า ส่วนการมีความผิดปกติของภาพสะท้อนของคลื่นเสียงแบบแพร่กระจายทั่ว ๆ ไปในอัณฑะร่วมกับการมีพยาธิสภาพที่เอพิดิไดมิสและการหนาตัวของผนังถุงอัณฑะจะโน้มเอียงไปทางภาวะการติดเชื้อ*