

SURGICAL DISEASES OF THE GENITAL URINARY APPARATUS

KIDNEY

UPPER URINARY APPARATUS (RENAL PELVIS AND URETER)

BLADDER

PROSTATE

URETHRA

MALE GENITAL APPARATUS

TESTES

PENIS

SURGICAL OPERATIONS

CONGENITAL ALTERATIONS (1)

STENOSIS OF THE URINARY TRACT (2)

STENOSIS OF THE PELVICO-URETERAL JUNCTION

STENOSIS OF THE URETERAL-VESICAL JUNCTION

URETHRAL STENOSIS

URETEROCELE (3)

CRYPTORCHIDISM (4)

TUMOUROUS PATHOLOGY

RENAL TUMOURS (5)

TUMOURS OF URINARY TRACTS (6)

TUMOURS OF THE UPPER URINARY APPARATUS (CALICES, RENAL PELVIS AND URETER)

TUMOURS OF THE LOWER URINARY SYSTEM (BLADDER AND URETHRA)

PROSTATE TUMOURS (7)

TESTIS TUMOURS (8)

LITHIASIC PATHOLOGY (9)

ALTERATIONS IN THE URINARY CONTINENCE (10)

FEMALE URINARY INCONTINENCE (11)

MALE URINARY INCONTINENCE (12)

(1) CONGENICAL ALTERATIONS

They are malformations of the normal development of a tissue during its embryologic formation. They cause different diseases according to the location of the affected organ.

(2) Stenosis of the urinary tract

We call urinary tract the structure that communicates the kidney with the bladder (upper urinary tract) and this one with outside through the urethra bringing urine from the kidney where it forms to the bladder where it is stocked in order to be expelled via miction.

The urinary tract has three parts; the calices and the renal pelvis that are located near the kidney, the ureter that is the duct that conducts urine from the kidney to the bladder and the urethra that communicates the bladder with the outside as we have mentioned before.

In any of these tracts, there may be a stricture of the duct during its development or stenosis.

Strictures usually happen in:

The upper urinary apparatus

The junction of the renal pelvis with the ureter: (pelyco-ureteral union)

The junction of the ureter with the bladder: (ureteral-vesical union)

The lower urinary apparatus

As a urethral stricture as the growth of the urethral mucosal folds, named urethral valves.

The urinary apparatus as upper as lower may suffer from stenosal processes for acquired reasons, secondary to inflammatory processes (infections, lithiasis , etc.) or traumatic (accident traumas or lesions secondary to surgical operations in this zone). In this case, the location of the stenosis is located where the alteration occurred.

The consequences and the treatment are similar to the congenital ones.

THE CONSEQUENCES THEY HAVE

Obviously, the immediate consequence of the stricture or stenosis of the urinary tract is the difficulty of the urinary evacuation that accumulates abnormally above the capacity of the stricture.

IN THE CASE OF THE UPPER URINARY APPARATUS (renal pelvis and ureter), The consequence is the abnormal dilatation of the urinary tract and its increasing pressure which gives rise to an alteration of the renal function; the difficult filtration and the formation of urine may cause a renal dysfunction on the long term. It is usually unilateral but if it affects both kidneys (which is not very usual), it may cause renal insufficiency as the kidney can not eliminate the toxic products that are part of urine (for example, urea) and that it purifies.

The most important symptoms of this disease are pain, urinary infection with high temperature.

The surgical solution is the elimination of the affected part; pelyco-ureteral junction or urethral-vesical junction via its extraction and junction of the healthy parts in order to canalise urine adequately without any obstacles. Sometimes, in the endoscopic operation, the stenosed part has not to be extracted but amplified with an internal cut of the stricture.

IN THE CASE OF THE LOWER URINARY APPARATUS (URETHRA), the consequence is; the difficulty of the urinary evacuation that shows up with the alteration of the vesical functioning and the urinary retention inside the bladder. In this case, it is always bilateral and might cause renal insufficiency.

The most important symptoms are: mictional difficulties, alteration in urine flow, thinner and with less pressure, alterations derivative from urinary retention such as pain in the pubis and urinary infection with high temperature.

When the difficult evacuation affects the functioning of the bladder chronically and on the long term, the upper urinary apparatus might be affected with the ureteral and pelvic dilatation and sometimes the renal function as well.

Renal insufficiency is rare but in this extreme situation, the toxic elements purified by the kidney increase as we have mentioned before (urea, etc).

The surgical surgery consists in the elimination of the stricture that consists in an internal cut in it or in the elimination of the urethral valves resecting them (endoscopic removal). If this procedure is not possible, we have to recur to open surgery. It consists in the elimination of the stricture and the junction of the healthy parts in order to reestablish urine flow.

(3) UTEROCELE

This is a congenital malformation in the development of the piece of the urinary duct that links the kidney to the bladder (ureter) at the inlet of it in the vesical wall (intra-wall piece). It is caused by an alteration that affects the ureteral calibre or its muscle that gives rise to the dilatation of this part of the duct that shows up as a pseudocystic formation where urine remains stagnant.

THE CONSEQUENCES IT HAS

The alterations are specially secondary to the stagnant urine that gives rise to the precipitation of urine salts and to the formation of calculi (stones) in the ureteral dilatation. Therefore, urinary infections are more usual as a result of urine retention that favours the growing of germs or the likely formation of calculi later. It seldom gives rise to

the dilatation of the upper urinary tract because of obstruction. In this case, the clinic symptoms are similar to the nephritic colic one with lumbar pain with or without infection.

Uteroceles can usually be operated via endoscopy through the urethra by making a cut in the wall of the uterocoele that is located inside the bladder (sticking out from it visibly) and by amplifying its outlet in order to avoid urine retention inside. If there is a lithiasis, it will also be removed via endoscopy.

(4) CRYPTORCHIDISM

The etymologic meaning is hidden testis.

The testis forms embryologically in a lumbar position (at the same place as the kidney). During the embryonic growing, it descends until it reaches its definitive position in the scrotum.

Cryptorchidism implies the lack of complete testicular descent, as unilateral as bilateral so that the gonad is outside the scrotum. The testis may be located at any place along its normal distance; as abdominal as inguinal and also at abnormal places or ectopias.

The consequence is the absence of the palpable testis and the inability to make it descend to the scrotum by hand. Therefore, if it is descended using adequate methods, the testis returns to its former position outside the scrotal pouch immediately.

It is usually asymptomatic but there might be sometimes abnormal scrotal torsion in motile testes (such as lifts as they go up and down easily). This torsion gives rise to the alteration of blood flow that gets to the testis with its consequent vascular function and to necrosis (destruction of the tissue) of the testis and its consequent loss.

Therefore cryptorchidism alters fertility as it reduces the formation of spermatozooids and alters their formation (asthenozoospermy).

Another aspect derivative from cryptorchidism is the major predisposition of these testes to develop malignant tumours. Their difficult exploration complicates their evolution that is the reason why it has to be treated. A hormonal treatment that is based in gonadotropines (stimulating genital hormones) is tested.

This treatment sometimes helps naturally the descent of the testes to their usual location inside the scrotum.

If the hormonal treatment fails, surgery is necessary. It consists in getting the descent of the testis to the scrotum fixing it to the scrotum (orchidopexy) or in the extirpation of the testis if there is abnormality that makes its viability suspicious.

TUMOURAL PATHOLOGY

(5) RENAL TUMOURS

Renal tumours may be benign or malignant.

Renal tumours may be derivative from different renal tissues named-adenomas, fibromas, oncocytoomas, angiomyolipomas, etc. – according to the affected tissue.

The alterations depend on the destruction of normal tissue (affecting only the kidney and not the surrounding tissues) they form in their growing process or on the alteration because of the compression of the surrounding tissues that gives rise to the obstruction of the urinary tracts and make the urinary evacuation difficult. They never cause distant metastasis.

Malignant tumours may be: carcinomas or sarcomas. It depends on the affected tissue (epithelial – carcinomas – or – conjunctive – sarcomas). Also nephroblastoma or Wilms tumour is malignant. It appears in childhood. After the age of 8, it is very exceptional. It seems to have a genetic or even hereditary component.

One of the main features of malignant tumours is that apart from the alterations caused by their local growing such as benign tumours, (compression, dilatation of tracts, etc.) malignant tumours cause the invasiveness of the renal and surrounding tissues. These tumours develop out of the renal margins and cause distant metastasis on bones, lungs, liver, brain, etc.

The most common symptoms of renal tumours are hematuria (urine bleeding), pain and a sensation of heaviness. There might be high temperature secondary to infection (in case of compression and urine retention) or to tumorous pathology that sometimes gives temperature because of neoplasia.

In cases of malignant tumours, there are peculiar symptoms of cancerous tumourations such as tiredness, appetite and weight loss. Malignant tumours have secondary symptoms of the organs they affect; lungs, liver, bones, etc.

Treatment

In the case of benign renal tumours, the treatment depends on their repercussion on the size or compression of the surrounding renal tissues that may or not affect the urinary evacuation. The tumours that usually alterate its growth and the destruction of its tissue are the angiomyolipoma and the oncocytoma. The removal of the whole kidney or the affected part of it (nephrectomy) and even tumerectomy – the removal of the tumour if the latter can be easily resected and separated from the healthy parts- are usual.

If the tumour is malignant, a more radical solution is necessary. The whole kidney with its perirenal fat has to be removed. Moreover, a ganglionar cleaning has to be done with the extirpation of the corresponding ganglionar chain.

RENAL CYSTS: they are benign tumours that are located inside the renal tissue separated by an envelope or a capsule that contains liquid. They are usually congenital and hereditary such as renal polycystosis that is multiple and bilateral and tends to develop renal insufficiency. Apart from this disease, the evolution of cysts is completely anodyne. They cause alterations according to their location and volume. When they compress the urinary tracts (renal calices or renal pelvis), it alterates the urinary evacuation, the dilatation of the urinary tract and causes pain and sometimes urinary infections.

Tumours seldom form in renal cysts that are easily detected in radiological explorations (echographias, scanner).

Treatment

The treatment depends on the localisation of the tumours.

Simple renal cysts do not have to be treated if they do not cause compression on the urinary tracts. Only 'complicated cysts' with suggestive images of intracystic alterations have to be treated.

If the cyst is very big or causes compression, we can try the evacuation of the cystic content or the sclerosis of the walls with certain substances that will avoid the liquid reproduction. If there's recidivation or intracystic alterations (obviously tumours included) the surgical removal is necessary.

(6) TUMOURS OF THE URINARY TRACTS

The urinary tracts are the ducts that go from the renal parenchyma to outside. Their function consists in bringing urine produced in the kidney and evacuating it outside. They consist of the upper urinary apparatus (calices, renal pelvis and ureter) and the lower urinary apparatus (bladder and urethra).

The tumours that form in these structures are basically the same derivative from the urothelial tissue – coating of the urinary apparatus -or derivative from the mesenchymatic tissue – smooth muscle, fat, etc.)

The most usual ones are urothelial tumours undoubtedly, mesenchymatic tumours are very exceptional.

Although tumours are the same in the whole urinary apparatus, their repercussion and treatments are very different whether they are in the upper urinary apparatus (calices, pelvis and ureter) or in the lower urinary apparatus (bladder and urethra).

As in a case as in an other (urothelial and mesenchymalic), tumours may be benign or malignant.

In the case of the mesenchymalic tumours, benign ones differ from malignant ones in the cellular differentiation. Malignant tumours have an abnormal cellular increase with some completely dedifferentiated cellular features. Obviously, the extension level affects prognosis because of the destruction of the local tissue they cause and the possibility of being metastatic (distant substantial development on organs such as liver, lungs, etc).

In the case of urothelial tumours, cellular alterations (such as in tumours) and the infiltration of the tumour into the surrounding tissues (into the mucous membrane, the superficial and deep muscle structure, the surrounding fat and in the end obviously into the surrounding organs) make them malignant. Thus, cellular alterations and the infiltration of the tumour make it benign or malignant.

Symptoms: In all these cases, the symptom par excellence is hematuria (urine bleeding) with usually clots that may give rise to clinical symptoms of urine obstruction with sometimes urinary dilatation and pain (when it affects the upper urinary apparatus) and vesical urine retention (when it affects the lower urinary apparatus).

In the case of malignant tumours, as we have mentioned, they may grow and cause invasiveness in the wall of the urinary tracts.

In the case of the renal pelvis or the ureter, this invasiveness may give rise to the obstruction of urine that makes its outlet difficult and causes the dilatation of the urinary tract and increase in renal pressure and affection. The clinical symptoms are colic and there might be urinary infection.

If the tumour is located in the bladder, the invasiveness of the wall does not give rise to the obstruction of the upper tracts only if it is in the ureteral débouchement in the bladder and causes invasiveness due to the growing of the tumour. If it is located at the vesical outlet (pelvic neck), there might be symptoms such as urinary obstruction similar to prostatic ones (mictional difficulties, major mictional frequency, etc).

These localisations are rarer since the most usual symptoms are local such as sensation of heaviness or lower abdominal pain, etc.

Besides the hematury and pain caused by urine retention, there might be urine infection with high temperature.

In the case of malignant tumours, there are symptoms derivative from the general affectation such as appetite and weight loss, tiredness, etc. (paraneoplastic syntomatology).

Treatment

The treatment depends on the tumourous localisations.

In case of tumours of the upper urinary apparatus: In cases of isolated tumours, they can be extracted via resection respecting the rest of the urinary tract. Therefore, in the case of non infiltrating tumours located in at the ureteral extremity (near the bladder), the affected ureteral piece can be removed and the healthy ureter reimplanted in the bladder.

In case of multicentric or urothelial, infiltrating or mesenchymal malignant tumours sarcomas, the treatment consists in extracting the urinary tract in all its extent, the kidney and the affected side of the upper urinary tract (nephroureterectomy).

In case of vesical tumours, a transurethral resection is systematically necessary (extraction of the tumour through the urethra with a special instrument called operating cystoscope or resectoscope). The anatomopathological study gives us information about the nature of the tumour (urothelial or mensenchymal) as well as the degree of local extension or the level of infiltration and the cellular differentiation.

If the the tumour is urothelial with the infiltration limited to vesical mucous and submucous membrane (without infiltrating the vesical muscular) or if it is a mesenchymal begnin tumour, the treatment will consist only in the transurethral resection practised for the study, that is why it has to be as ample as possible in order to remove the whole tumouration via endoscopy.

The anatomopathological study indicates if the tumour is urothelial and infiltrates the vesical muscular coat or if it is malignant mesenchymal (sarcoma). In both situations, the treatment has to be much more radical; the extraction of the bladder, prostate and seminal vesicles is necessary as much as a lymphadenectomy (extraction of the ganglions of the related chains).

In this case, obviously, the urine has to be derivated (as we have eliminated its natural reservoir, the bladder).

The intestine is used in most derivations. It is used as a 'neobladder' reservoir the ureters are implanted to, in order to collect the urine from its natural duct.

In other cases, the extraction of the reservoir through the abdominal wall and its implantation into this zone through an orifice is more recommended.

Occasionally, none of these operations using the intestine is possible but it is very rare. In this case, the derivation from the urinary tract (the ureters) to the abdominal wall is necessary. In these cases, the urine comes out directly to a collecting pouch that is regularly changed. The inconvenient is that they cause more infections (in comparison with the transintestinal derivation), they tend to have more amplification in the skin (stenosis of the anastomotic mouth) and daily dilatation or a tutor probe in it is necessary.

(7) PROSTATE TUMOURS

The prostate is an exclusive male organ that is located on the base of the bladder round the urethral outlet. Thus the prostatic alterations (inflammation, infections, tumours, etc.) have an immediate

repercussion on the mictional quality - such as mictional discomforts (irritation), inability to evacuate urine (due to the obstruction caused by the urethral compression).

The essential prostatic function is the secretion of seminal substances that favours the mobility of the spermatozoons.

The prostate has a small size (12 – 15g) in the lifetime. As any bodily organ, it may suffer from different diseases (congenital, inflammatory, infectious, tumourous, etc). Each of these diseases is more typical of a period of time. Congenital diseases break out early, the inflammatory ones in the early adult time and the tumourous ones in advanced ages (usually up to 45 – 50).

Tumourous diseases may be benign or malignant.

The prostatic adenoma or prostatic hyperplasia is the most common one amongst the benign tumours. This is a prostatic growing at the expense of an increase in its number of cells. These are normal, that is why they do not have malignant features.

Symptoms

Since the prostate makes bigger, there is a urethral compression that makes the urinary evacuation difficult. At the early stage, the vesical contraction strength increases as well as the muscular strength which relieves the symptoms and lessens the difficulty of evacuation. If the obstruction continues the vesical contraction ability will not be

enough to evacuate urine which causes a urine retention. It is usually a slow process. First, it gives rise to progressive postmictional residue until a complete urine retention which makes its evacuation impossible and makes the placement of a urethral probe necessary.

Therefore, during the first stages of the disease, patients have evidence of an increase in the mictional frequency as much in daytime as in nighttime as well as a decrease in strength and calibre of the mictional flow that is progressive according to the degree of obstruction.

Treatment

On the first stage, patients can be treated with relaxing medication for the muscle structure of the vesical outlet (alpha-blockers) and prostatic anti-congestive medication that relieve the symptoms and improve the mictional flow. When there is postmictional flow that can not be healed by medication, surgery is necessary in order to eliminate the obstruction.

The surgical operation of the prostatic hyperplasia consists in eliminating the prostatic part that caused the prostatic growth, that is to say, the ablation of the prostatic adenoma. The latter forms in the prostatic central part and is usually separated from the rest of the prostate which makes the enucleation possible leaving the rest of the prostatic gland outside as an envelope.

There are two techniques for the prostatic enucleation; one in the open surgery, opening up and the other one, without opening up, via endoscopy through the urethra. The election depends on a series of factors; the most important one is the prostatic shape. If the prostate is very big, open surgery is the best as it is faster and more radical.

The malignant tumours may be epithelial or mesenchymal.

The epithelial ones or carcinomas are more common, the mesenchymal ones or sarcomas are rare.

Prostatic tumours always give rise to the growth of the prostatic gland but in this case due to absolutely anarchic and disorganised cellular multiplication with completely disorganised and life-threatening cells because of their infiltrating tendencies, they have a predisposition for extending beyond the prostatic limits with invasiveness not only in the surrounding organs (bladder, seminal vesicles, etc) but also in the liver, lungs, bones, etc. (distant metastasis).

Symptoms

If prostatic malignant tumours develop, the prostate gets bigger and therefore such as in benign tumours, the urinary evacuation is difficult.

In that sense, the symptoms are similar to the prostatic hyperplasia's. In more advanced stages of the disease, there are symptoms derivative from the tumourous malignancy such as tiredness, fatigue, appetite and weight loss, etc. Therefore, on the ultimate stage, the symptoms derivative from metastasis - such as bone pains, respiratory, hepatic symptoms – appear.

Presently, there is a diagnostic procedure that has revolutioned the diagnostic and treatment of the prostatic malignant tumours. This is the PSA.

The Prostatic Specific Antigen (PSA) is a glycoprotein that the prostate forms exclusively. Its function is the liquefaction of seminal clot. As it forms only in the prostate, it makes it specific for this organ (there is not this substance in any other bodily organ). Therefore, its alteration indicates us only prostatic diseases. However, its elevation does not indicate us what kind of disease it is about, that is the reason why when it is altered, prostatic biopsy is necessary. It indicates us if the disease caused by the elevation of the PSA is caused by a prostatic malignant tumour.

That is why all men over 50 have to undergo systematic analysis when there is a prostatic symptomatology .

Treatment

If the prostatic carcinomas are diagnosed on the early stage thanks to the detection of the PSA, they may have curative therapies since they are located within the prostatic limits defined as 'organ-confined' and do not develop out of them

They can be treated by conformed radiotherapy or by radical surgery.

The radical surgery consists in the extraction of the whole prostate as well as the seminal vesicles and the loco-regional ganglionic cleaning (obturator and iliac ganglions). Even the peripheral prostatic zone is removed unlike the prostatic adenoma. Thus, the reconstruction of the anatomic zone is necessary by implanting the urethra in the bladder as the latter remains separated by surgery.

There might be sequelae such as urinary incontinence that can be normally avoided by adequate surgical techniques as long they can be performed without endangering the whole tumourous extraction.

After the radiotherapy or surgery, the PSA has to be controlled since its elevation implies there may be a growing cell out of the prostatic limits after the prostatic removal. In this case, other therapies are administered such as radiotherapy after surgery and otherwise hormonotherapeutic.

When the previous study to the treatment warns us that the prostatic carcinoma has developed beyond the prostatic limits and can not be healed curatively, the patient may be administered palliative treatments that are very effective. They are designed to reduce or eliminate the testosterone levels in blood since this hormone is known to have a great influence on the prostatic growing and therefore on the negative evolution of the tumour.

Therefore, if the cancer causes the prostatic growth that gives rise to urinary clinical symptoms and if it can not removed because it has developed beyond the prostatic limits, the disobstruction of the urinary outlet is necessary. The obstructing prostatic part that prevents the vesical obstruction (Transurethral Resection – TUR) is resected through the urethra that prevents the vesical obstruction via endoscopy.

The prostatic sarcomas (mesenchymal malignant tumours) are very aggressive with an invasive risk as loco-regional as metastatic.

The palliative treatments (surgery, radiotherapy o chemotherapy) will be obviously more effective the sooner the tumour is diagnosed and the less developed it is. But in any case, they do not have the same curative tendency as the carcinomas. Only their growth and development can be controlled as far as possible. They are not conditioned by hormones , thus they are tumours that grow regardless of the testosterone levels and are not liable to be treated by hormonal therapies.

(8) INTRA-SCROTAL TUMOURS

As we know, the gonads are located inside the scrotum. The testes - or the testes that have descended from an intra-abdominal to their definitive intra-scrotal position with the fetal maturation and development - are enveloped in one of these. Around the testis there is a series of membranes that envelop and protect it. In fact, they are the same abdominal membranes that are dragged in the testicular descent and that form the scrotal walls (vaginal – that corresponds to the peritoneum – muscles corresponding to the abdominal muscles, etc).

Next to the testis and intimately stuck to it, the epididymus is an amplified formation where the testicular spermatozoons start to mature. The epididymus is the referent duct the spermatozoons come out from to the urethra across the prostate.

Therefore, the spermatic cord formed by the deferent duct, including its blood vessels, arteries and veins, is located in the scrotum.

The intra-scrotal components may suffer alterations that give rise to tumourous or pseudo-tumourous formations, some of them are benign and some others malignant).

PSEUDO INTRA-SCROTAL TUMOURS

The hydrocele and the varicocele are some of the most usual ones.

THE HYDROCELE

This is a liquid accumulation inside the scrotum that causes the hemiscrotal growth. The liquid forms spontaneously or more often, due to the scrotal aggression (testicular infection, trauma, etc). It is completely benign and the solution is always surgical since the liquid evacuation via puncture may cause infections and does not solve the problem since there is recidivation.

Surgery consists in the liquid evacuation and the placement of the internal scrotal envelopes (vaginal) inverted in order to prevent liquid accumulation.

VARICOCELE

It appears like a palpable tumouration through the scrotum, although it is not a tumour but varices of the veins of the spermatic cord that grow a lot during exercise and cause tortuous formations in the inguinal- scrotal zone that are sometimes similar to a tumouration. They are completely benign.

The unique alteration is a negative effect on the spermatic maturation that sometimes reduce the spermatozoal number and mobility.

It is operated only in order to prevent these spermatozoal alterations. They rarely cause discomforts such as heaviness or pain that could justify an operation. The operation consists in the ligation (a knot) of the inguinal veins.

INTRA-SCROTAL BENIGN TUMOURS

The most common ones are the cysts of epididymus or of the spermatic cord that are liquid or spermatic formations. They are always benign. They are removed only if they cause any alteration or pain.

The solid tumourations are derivative from the mesenchymal tissue such as fibromes, myomas, angiomas, etc. that can be located in any intra-scrotal element, it is usually located, rarely though, in the cord and in the epididymus. It is usually difficult to diagnose and make the difference with malignant tumours. Therefore, it has to be removed for its anatomopathologic analysis.

INTRA-SCROTAL MALIGNANT TUMOURS

Extra-scrotal and intra-scrotal tumours have to be differentiated.

Extra-testicular tumours

The most common ones (very rare though) are derivative from the mesenchymal tissue such as fibrosarcomas, leiomyosarcomas, angiomyosarcomas, etc. They are usually located in the cord and in the epididymus such as benign tumours.

Intra-testicular tumours:

They form inside the gonad or the testis

Basically we can distinguish two great types; the seminomas and the non seminomatous ones such as the choriocarcinoma, the embryonal carcinoma, the teratoma and the yolk sac tumour.

The seminomas are the most common ones because they form from germinal cells.

Though the cause of their formation is not known, they are related to alterations such as the lack of testicular descent, congenital testicular anomalies, Klinefelter Syndrome, etc. therefore we appreciate the hereditary tendency.

The seminoma specially tends to limit to the testis for a long time without developing outside. Therefore, an early diagnosis is important.

Symptoms

The testicular tumours cause the irregular testicular growth, usually with hard and easily noticeable formations.

Echographical studies are usually necessary in order to clarify the diagnostic. Once confirmed, some studies of tumourous extension will be necessary in order to evaluate the possibility of as ganglionar as visceral (liver, bones, lungs) distant metastasis.

Treatment

The treatment consists in the removal of the affected testis and of the ganglionar cleaning if it is necessary.

As we have mentioned, the seminomas are usually diagnosed on the early stage, when it is limited to the gonad only, in this case, the problem can be solved with the extraction of the affected testis.

If ganglionar invasiveness is suspected, the lymphadenectomy (ganglionar removal) of the intra-abdominal is necessary.

If there is generalised metastatic invasiveness, surgery as well as the specific chemiotherapeutic treatment will be necessary.

(9) LITHIASIC PATHOLOGY

Lithos means stone in Greek. The term lithiasis comes from it in order to define the formations of the urinary apparatus as a result of the precipitation of salts, that urine usually contains, and that form real stones named urinary caluli.

They may be from different kind depending on the substance they are formed. The most usual ones are calcic (such as calcic oxalate) or ureate (uric acid). They cause the spontaneous calcic and uric

precipitation of urinary salts in situations of urinary concentration or alterations in urinary pH.

There are other kinds of lithiasis that are caused by metabolic alterations - such as calcic lithiasis, cystic lithiasis, etc - and by alterations of the calcic metabolism (hyperparathyroidism, etc) of the cystine, etc.

Therefore, there are some other kinds of lithiasis as results of local alterations such as germinal infections of urease that alkalinise the milieu and cause the precipitation of magnesian ammoniac phosphate which gives rise to the formation of calculi of struvite.

There are some determined causing factors in lithiasic formations that are sometimes difficult to catalogize.

In general terms, we can say that general factors such as;

- the diet (the excessive consumption of certain foods that contain forming elements of lithiasis such as dairy for calcium, some kinds of vegetable for oxalic acid and seafood for uric acid, etc).

- general diseases such as absorptive alterations of certain elements such as oxalic acid in Crohn disease or pancreatic diseases that increase urinary oxalic excretion.

- certain genetically conditioned metabolic alterations such as hyperthyroidism that we have mentioned before, that increases calcic elimination in urine ; primary hyperoxaluria or hyperuricuria that eliminates too much oxalate and uric acid in urine.

In other cases, the lithiasic formation is favoured by local factors such as urinary infections that helps the struvite formation, as we have

mentioned. But amongst the local factors, we have to mention the alterations of the urinary apparatus that favour urinary stagnation and thus the predisposition for the precipitation of dissolved salts more easily. They are all the diseases that cause stagnation such as the stricture of the urinary ducts (calices, pelyco-ureteral junction, ureter, prostatism, urethral stenosis, etc.). In all these cases, the urine flows more slowly, the minor or major urine accumulation increases the dissolved salts in it with a major lithiasic risk.

Finally, there are some factors that reduce the possibility of lithiasic formation, therefore their reduction favours lithiasic outbreaks such as citrates. They make the calcic lithiasic formation difficult. If there is a lack of them, there is be a major risk of formation of stones. We know that the levels of citrates are reduced in situations such as; excessive exercise, metabolic acidosis, potassic deficit or androgenic actions. Therefore men have fewer levels of citrate than women.

The consequences they have

The lithiasis of the urinary apparatus can be located in any part of it; renal calices, renal pelvis, ureter, bladder and urethra. In some parts, they form in situ (probably more in calices, renal pelvis and bladder) and in others after their emigration from their formation place (such as usually in the ureter and in the urethra).

The consequences are general in all kinds of lithiasis (regardless their location) and others are secondary to them.

As we have mentioned, the most common general consequences are haemorrhages caused by the direct aggression on the urinary apparatus and the risk of infection (as they are foreign bodies, they favour the germinal nest or they alterate the urinary tract – such as the obstruction that favours the germinal increase in urine).

The specific consequences depend on its location. If it is located in the urinary apparatus and cause obstruction, it will give rise to a difficult urinary elimination with urine stagnation above the obstruction.

If there is obstruction in the upper urinary apparatus, there will be the dilatation of the corresponding tract (ureter, renal pelvis, calices) named hydronephrosis. If the obstruction is very substantial and complete, the stagnant urine gives rise to an increase in pressure of the renal tracts that will cause the difficulty of urinary filtration and to the undoing of corresponding renal function on the long term. This undoing takes a long time to be complete and is usually reversible when the obstruction disappears. The prompter the solution is and the less intense the obstruction is, the earlier the kidney will recover its function. If the obstruction is bilateral, there is a clinical symptom called anuria that is the absent elimination of both kidneys and the accumulation of noxious substances that the kidney eliminates in blood. This clinical symptom is very serious and requires an urgent solution.

If there is obstruction in the lower urinary apparatus (vesical neck or urethra), it gives rise to urinary retention that prevents the evacuation of the stagnant urine. In this case, though the kidneys work properly, an immediate solution is also necessary for the urinary evacuation.

The obstructions are not usually as complete and as serious. They usually give rise to situations of partial or transitory obstruction that cause major clinical symptoms of pain but usually they do not have any repercussion if they are healed adequately and timely.

In general terms, we can sum up the symptoms of urinary lithiasis by; pain hematury, high temperature (if there is an infection). The pain is colic, very intense and may sometimes be not relieved by conventional antitianalgesics and require opiate substances. Hematury is not usually important as it usually disappears spontaneously. High temperature is usually sudden and specially in daytime and nighttime. In case of lithiasic obstruction, it might be serious since germs may pass through the blood flow and cause clinical symptoms of sepsis that - as these urinary germs (gram-negative) - have a predisposition for clinical symptoms of septic shock in very serious situations and require an immediate solution for the obstruction.

TREATMENT

In most cases, the lithiasis of the urinary tract disappears spontaneously without the help of any treatment. They are sometimes helped by diuretics, alphablockers, anti-inflammatory medication and obviously analgesics.

If the patient has still evidence of clinic symptoms or if there is still obstruction or if there are still infections, it is necessary to obtain the disobstruction of the urinary tract or the elimination of the foreign body. Obviously, as we have mentioned, in the cases of uni or bilateral complete obstructions and septic infections, the lithiasic treatment is always urgent.

The lithiasic treatment can be divided in three great parts: lythotripsy, endoscopical surgery and conventional surgery.

The lythotripsy comes from the word 'lithos' – stone – and tripsy from tricia – fragmentation – that is to say the fragmentation or breaking of the lithiasis. This fragmentation may be carried out via extracorporeal or endoscopic procedures.

The extracorporeal lythotripsy is made with a machine that adapts to the patient's body through a hydraulic cushion and that sends out determined shock waves that break the stones once they have been located in radiological procedures (XR or echographias). This procedure enables a complete control of the fragmentation during the whole process.

The advantage is that they do not have any external aggression since the generated waves go through the body colliding only with the localised stones. The inconvenient is that they are very useful for the renal lithiasis (renal pelvis and calices) but they are less useful for the ureteral lithiasis and almost useless for vesicular and urethral lithiasis. The other inconvenient of this technique is that it causes only the lithiasic fragmenture but not its destruction. Therefore, the fragments have to be expelled through the natural ducts and patients have sometimes clinical nephric colic symptoms that will have to be healed.

The endoscopic surgery uses surgical procedures with endoscopic instrumentarium that is introduced into the urinary apparatus through its natural orifices (urethra, bladder, ureter) or with via lumbar renal puncture. In both, as we have mentioned, we introduce instrumentarium with optics that enables us to see and work on any zone inside the urinary apparatus.

The lithiasis can be eliminated with this instrumentarium in two processes; it can be extracted if its shape makes it possible with some adequate and specific forceps or it can be fragmented, that is what we have mentioned before; endoscopic lithotripsy. The inconvenient compared to the extracorporeal technique is that although it is endoscopic surgery, surgical instrumentarium is necessary. However, the advantage is that the lithiasis is directly fragmented and is extracted in the operation. A safety catheter (Double J) is placed just in case there is a fragment that can not be removed in order to make its expulsion easy, preserving the renal function, since the urine goes through the catheter. When the process is over, the catheter is removed.

Conventional surgery. The patient is operated on with conventional techniques; with the bistouri and wound with a direct access on the

lithiasis and the consequent scar. Nowadays it is not very usual to recur to this procedure, the techniques we have mentioned (endoscopic lithotripsy) heal 99% of the lithiasic urinary apparatus. However in some cases they fail or some alterations in the urinary apparatus do not make the introduction of the instrumentarium possible and open surgery is necessary.

The kind of surgery depends on the lithiasic location. Anyway, it consists in starting with an incision in the lithiasic location (kidney - calices and renal pelvis – ureter and bladder), then in opening the urinary tract at the lithiasic level, in extracting it and closing up the operated zone with suture. In some cases, a catheter that communicates the kidney with the bladder (Double J) is placed. It is removed after the operation.

(10) ALTERATIONS IN URINARY CONTINENCE

Urinary incontinence is named the involuntary leakage of urine through the urethra that causes social and hygienic alterations.

On the one hand, many of the causes and solutions are the same for men and women but on the other hand, some are different due to the anatomic and structural differences of the genital apparatus and of the urethra. Therefore it is more convenient to evaluate this pathology in both sexes separately.

(11) FEMALE URINARY INCONTINENCE

We can distinguish the different following types of incontinence

- urinary exertional or stress incontinence: caused by the increase in the abdominal pressure or by physical efforts. It is related to sphincterian insufficiency, usually in the angle formed by the vesical neck with the urethra. This is the consequence of the weakness of the pelvic floor due to gynecological alterations such as the uterine prolapse that gives rise to cystocele secondary to the efforts after delivery, and usually after hysterectomies. Also, the weakness of the connecting tissue or the use of muscular relaxants may cause this kind of incontinence

- urgency or imperiosidad incontinence: prior to mictional urgency. It is caused by the hyperreflexia of the vesical muscle (detrusor) due to neurological effects that cause vesical instability. It is also known as uninhibited, instable, spastic or vesical instability. It is very common in people over 70.

This is the consequence of the vesical chronic irritation. It is related to recurrent urinary infections, estrogenic deficiency, chronic cystopathies such as interstitial cystitis, etc.

- Mixed incontinence: it has the mechanisms responsible for both stress and urgency urinary incontinence.

- Overflow incontinence: it is not as common and caused by problems of vesical overstrain secondary to neurological alterations or to the obstruction of the urinary tract.

Surgical treatment of the female urinary incontinence:

The urgency urinary incontinence does not have surgical treatment. It has to be treated by anticholinergic medication such as toltherodine, oxybutynin or trospium chloride that have resulted effective in the functional or urgency and mixe incontinence.

Urinary exertional or stress incontinence is the only one that can be treated surgically as well as overflow incontinence secondary to obstruction.

On the first stage (exertional), the alteration of the angle of the urethra with the vesical neck has to be corrected. Thus we can carry out the suspension of the vesical neck by fixing the vaginal lateral horns to the pubis. Therefore we can try to correct it with slings or suburethral suspension ribbons placed through the vagina and in the aponeurosis of the major oblicuous passing them along the vesical sides with some special needles (TVT) or via obstruction that gives the advantage of passing the needles far from the bladder and therefore that does not require any endoscopic control in the operation.

The treatment of overflow incontinence secondary to obstruction consists in treating the cause of the obstruction (urethral compression, sclerosis of the vesical neck, etc.)

(12) MALE URINARY INCONTINENCE

The mechanisms of continence in men are more complex than in women. They consist in two sphincterian systems that are located in the urethra. The first or proximal one is located in the vesical outlet

and is part of the vesical neck as an involuntary system. The second one has a more distal situation from the bladder from an element named veru montanum (where the ejaculatory ducts debouch to the male urethra). It is formed by striped muscular fibre and therefore it is voluntary.

In men, there is no incontinence because of the alteration of the urethral angle like in women due to these sphincterian mechanisms and due to anatomical urethral characteristics. The perineal system does not have such an important function in the male continence as in women.

We can sum up the most usual causes of male incontinence in two big parts:

Sphincterian alterations: usually secondary to causes derivative from lesions of the sphincterian system due to surgical operations in the zone or urethral traumas.

Thus the main cause of the male urinary incontinence is derivative from prostatic operations; transurethral resections, prostatic adenomectomies and above all total prostatectomies secondary to a prostatic carcinomas.

In these cases, the surgical lesion of the sphincterian system implies substantial urinary incontinence.

Vesical alterations: like women, men might have incontinence secondary to vesical instability, hyperreflexia of the vesical muscle or also to reduction in the vesical capacity.

The vesical obstructions also provoke overflow incontinence due to the same mechanism as in women.

Treatment of the male urinary incontinence

Different procedures are used according to the intensity of the incontinence and how serious the lesion is.

- Artificial urinary sphincter. It consists in a cuff that is placed surgically in the bulbomembranous urethra or in the vesical neck that is connected with a hydraulic system that makes possible its filling in order to close the urethra and its emptying in order to get the urethra open so that the bladder can evacuate the urine contained.
- Suburethral injections of synthetic material (usually bovine collagen) that reduce the urethral calibre closing its way via endoscopy The inconvenient is that if they fail they cause sclerosis that makes the use of other therapeutical means difficult.
- Bulbourethral sling similar to the ones used in women. They are placed in the bulbar urethra at the end of the urethra so that the urethra can compress on it when the abdominal pressure grows which this way obtain continence.
- As in women, overflow incontinence secondary to obstruction is corrected solving the cause of the urinary retention.