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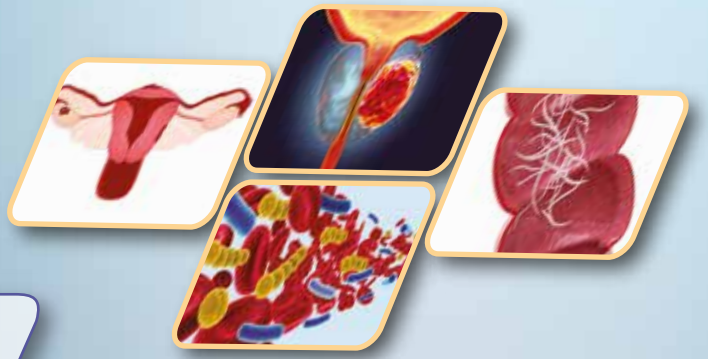

- Endometriosis
- Prostate Cancer
- Neonatal Sepsis
- Common Worm Infestations

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the SQUARE
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Contents

June 2019 VOL 26 NO. 2

Editorial

Dear Doctor:

We are delighted to present you the second issue of *"the SQUARE"* healthcare bulletin of 2019!

This edition of *"the SQUARE"* includes a variety of articles including "Endometriosis", a disease that affects the physical health and emotional well-being of many women of reproductive age. We have also focused on "Prostate Cancer", the second most common cancer in men worldwide and the most common noncutaneous malignancy in men within the United States. We have published a special feature on "Neonatal Sepsis", which remains one of the leading causes of morbidity and mortality both among term and preterm infants.

Moreover, we bring out a special write-up on "Common Worm Infestations", which is a global health problem and are widely prevalent in tropical and subtropical countries and occur where there is poverty and poor sanitation. Besides, we have our regular feature "Test Yourself" in this issue.

Our effort is to keep you updated, always! We believe you will enjoy reading this publication as well!

Please send your feedback to help us provide the highest quality and most useful service.

On behalf of the "*SQUARE* family", wishing you all and your family a very healthy, happy and blissful life.

Thank you!

Omar Akramur Rab

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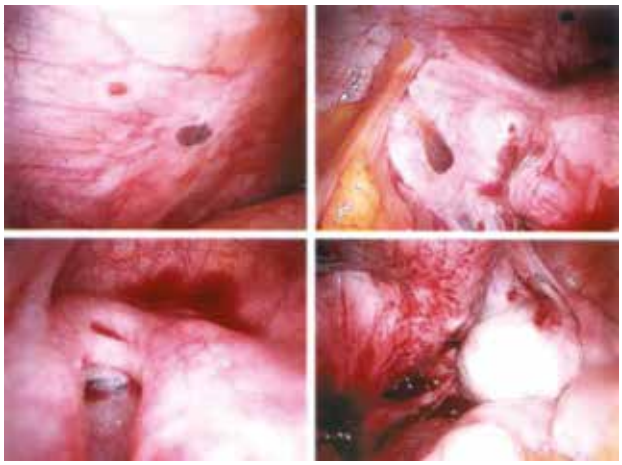
Endometriosis

Endometriosis is a chronic condition characterised by growth of endometrial tissue in sites other than the uterine cavity, most commonly in the pelvic cavity, including the ovaries, the uterosacral ligaments and pouch of Douglas.



Endometriosis. Red lesions on various organs.

Signs and symptoms :

About one third of women with endometriosis remain asymptomatic. When they do occur, symptoms, such as the following, typically reflect the area of involvement:

- Dysmenorrhea
- Heavy or irregular bleeding
- Pelvic pain
- Lower abdominal or back pain
- Dyspareunia
- Dyschezia (pain on defecation) - Often with cycles of diarrhea and constipation
- Bloating, nausea and vomiting
- Inguinal pain
- Pain on micturition and/or urinary frequency
- Pain during exercise

Patients with endometriosis do not frequently have any physical examination findings beyond tenderness related to the site of involvement. The most common finding is nonspecific pelvic tenderness.

Etiology

The exact cause and pathogenesis of endometriosis is unclear. Several theories exist that attempt to explain this disease, although none have been entirely proven. Leading theories include metaplastic conversion of coelomic epithelium and hematogenous or lymphatic dispersion of endometrial cells. It is likely a combination of various factors that cause and determine the severity of this disease.

Previous theories suggest that endometriosis results from the transport of viable endometrial cells through retrograde menstruation. Cells flow backward through the fallopian tubes and deposit on the pelvic organs, where they seed and grow. A population of cells resides in the endometrium, which retain stem cell properties. It may be these properties that allow these cells to survive in ectopic locations.

Risk factors for endometriosis include the following:

- Family history of endometriosis
- Early age of menarche
- Short menstrual cycles (< 27 d)
- Long duration of menstrual flow (>7 d)
- Heavy bleeding during menses
- Inverse relationship to parity
- Delayed childbearing

Table : Common presentations of endometriosis

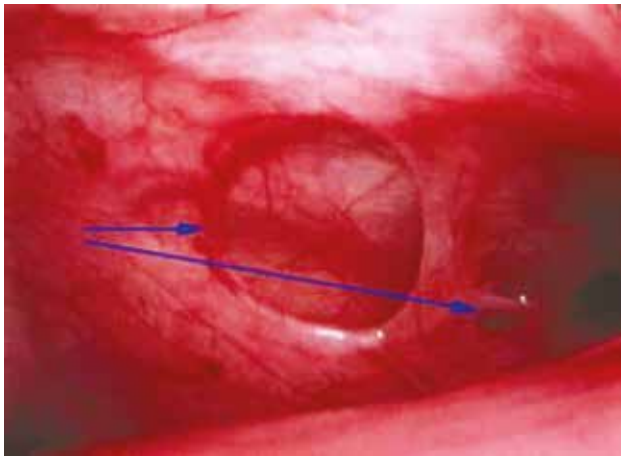
Symptom	Alternative diagnoses
Recurrent painful periods	Adenomyosis, physiological
Painful intercourse	Psychosexual problems, vaginal atrophy
Painful micturition	Cystitis
Painful defecation during menstruation	Constipation, anal fissures
Chronic lower abdominal pain	Irritable bowel syndrome, neuropathic pain, adhesions
Chronic lower back pain	Musculoskeletal strain
Adnexal masses	Benign and malignant ovarian cysts, hydrosalpinges
Infertility	Unexplained (assuming normal ovulation and semen parameters with patent tubes)

- Defects in the uterus or fallopian tubes
- Hypoxia and iron deficiency may contribute to the early onset of endometriosis

Factors associated with increased risk	Factors associated with decreased risk
Earlier age at menarche	Parity
Shorter menstrual cycle length	Current oral contraceptive use
Taller height	Smoking
Alcohol use	Higher body mass index
Caffeine intake	Regular exercise
	Fish and omega 3 fatty acids

Pathophysiology

Ectopic endometrial tissues are most commonly located in the dependent portions of the female pelvis (eg, posterior and anterior cul-de-sac, utero-sacral ligaments, tubes, ovaries), but any organ system is potentially at risk.



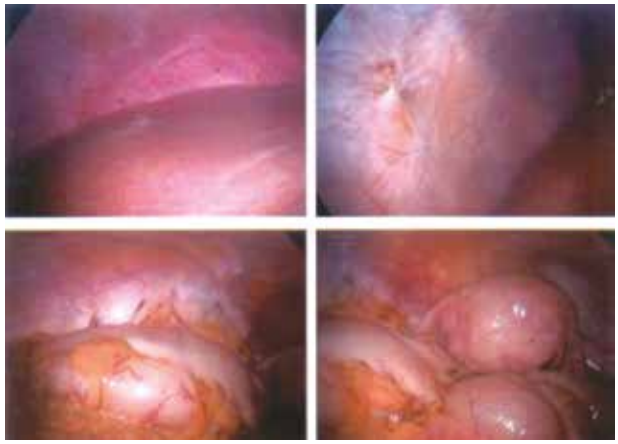
Peritoneal erosions and adhesions in the posterior cul-de-sac. These are typical of more severe endometriosis

These ectopic foci respond to cyclic hormonal fluctuations in much the same way as intrauterine endometrium, with proliferation, secretory activity and cyclic sloughing of menstrual material. The products of this metabolic activity, including the concentrated and cyclic release of cytokines and prostaglandins, lead to an altered inflammatory response characterized by neovascularization and fibrosis formation. Some investigators have been able to demonstrate abnormal T- and B-cell function, abnormal complement deposition and altered interleukin (IL)-6 production in women with this disease.

The associated pain, adhesion formation and anatomic distortion are responsible for the clinical consequences of this disease.

Epidemiology

Endometriosis occurs in 6-10% of US women in the general population and approximately 4 per 1000 women are hospitalized with this condition each year. The exact incidence in the general population is unknown, because the definitive diagnosis requires biopsy or visualization of the endometriotic implants at laparoscopy or laparotomy. Most prevalence studies are based on a surgical population in which the likelihood of disease is greater, with the best estimates of incidence in the general female coming from women with proven fertility undergoing tubal sterilization procedures.



Adhesions due to endometriosis.

Endometriosis is an estrogen dependent disease and thus, usually affects reproductive aged women. This condition has a prevalence rate of 20-50% in infertile women, but it can be as high as 71-87% in women with chronic pelvic pain. In a large series involving adolescent females with chronic pelvic pain, 45% were found to have endometriosis at laparoscopy. Of note, only 25% had a normal pelvis. In that series, the rate of endometriosis was found to increase with age from 12% in females aged 11-13 years to 45% in females aged 20-21 years. In an earlier study, evidence of endometriosis was found during laparoscopy in 20-50% of asymptomatic women. A familial association exists, with a 10-fold increased

incidence in women with an affected first-degree relative. Monozygotic twins are markedly concordant for endometriosis.

Race, sex and age related differences in incidence

Most research and case studies have been performed in white populations; however, no difference appears to exist among ethnic or social groups. Although endometriosis is obviously a disease largely confined to the female population, interestingly, scattered case reports exist of lesions that are histologically indistinguishable from endometriosis found in men exposed to high-dose exogenous estrogens.

Endometriosis is largely confined to women of reproductive age with an active hypothalamic-pituitary-ovarian axis. Pelvic endometriosis typically occurs in women aged 25-30 years. Extrapelvic manifestations of this disorder occur in woman aged 35-40 years. Women younger than 20 years with this disease often have anomalies of the reproductive system. Prepubertal girls do not seem to be at risk for this disease, although the number of reports of endometriosis in young women shortly after menarche is increasing.

Menopause (whether spontaneous or induced through surgical or medical means) usually leads to resolution of symptoms. The disease seems to remain quiescent even in the face of hormone replacement therapy.

Prognosis

Endometriosis has been found to resolve spontaneously in one third of women who are not actively treated. However, it is generally a progressive disease, with an unpredictable extent of progression and subsequent morbidity. Although most patients (up to 95% in some studies) respond to medical therapy (suppression of ovulation) for decreasing pelvic pain, such therapy is ineffective for treatment of endometriosis-associated infertility but does preserve the potential for conception. Nonetheless, as many as 50% of women have a return of symptoms within 5 years with medical management.

Combination estrogens/progestins relieve pain in as many as 80-85% of patients with endometriosis-related pelvic pain. After 6 months of danazol therapy, as many as 90% of patients with moderate endometriosis experience adequate pain relief.

Findings from the prospective Australian Longitudinal Study on Women's Health of 9,585 women (age at trial onset, 18-23 y) indicated that, regardless of fertility status, previous exposure to oral contraceptive pills (OCPs) reduced the risk of a subsequent diagnosis of endometriosis among parous women but increased the risk among nulliparous women.

Relative to women who never used OCPs, the hazard ratio (HR) for endometriosis among women with up to 5 years of OCP use before diagnosis was 1.8 in nulliparous women compared with 0.41 in parous women. In those with a history of OCP use for 5 years or longer, the HR was 2.3 in nulliparous women and 0.45 in parous women. The investigators suggested a possible reason for the two fold increased risk of endometriosis among the nulliparous women may have been early noncontraceptive use of OCPs.

Minimally invasive surgical therapy affords better fertility rates, but this treatment is not as effective at eliminating pain. Definitive surgical therapy (total hysterectomy with bilateral salpingo-oophorectomy and peritoneal stripping) offers the best chance for long-term resolution of pain (up to 90%). However, reserve this option as a last resort in patients with completely incapacitating disability or those who have no desire for future childbearing.

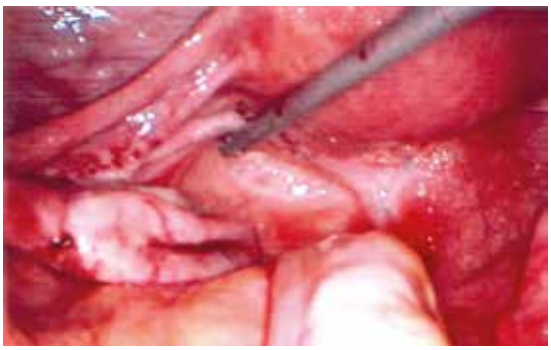
In general, pregnancy is possible but depends on the severity of the disease. Endometriosis signs and symptoms generally regress with the onset of menopause and during pregnancy.

Diagnosis

Preliminary diagnosis of endometriosis is usually done on the basis of clinical history since most women show normal results of physical examination. Clinicians palpate for uterine or adnexal tenderness, a retroverted fixture, nodulating uterosacral ligament and any pelvic masses. A tenderness on palpation of posterior fornix is the most common finding. Pelvic pain is also a symptom of other diseases such as pelvic adhesions, adenomyosis and gastrointestinal or urologic disorders; therefore, differential diagnosis is important.

Laparoscopy

Laparoscopy is considered the primary diagnostic modality for endometriosis. This is an invasive procedure with an overall sensitivity of 97% but with a specificity of only 77%.



Powder-burn lesions of endometriosis.

The following sites are, in descending order, the most common sites of involvement found during laparoscopy:

- Ovaries
- Broad ligament
- Rectosigmoid colon
- Distal ureter
- Posterior cul-de-sac
- Uterosacral ligament
- Bladder
- Histology

Histologic demonstration of a combination of endometrial glands and stroma in biopsy specimens obtained from outside the uterine cavity is required to make the diagnosis of endometriosis.

Laboratory studies

- Complete blood count (CBC) with differential - May help to differentiate pelvic infection from endometriosis, as well as to assess the degree of blood loss
- Urinalysis and urine culture - If urinary tract infection (UTI) is in the differential diagnosis
- Cervical Gram stain and cultures - Because sexually transmitted diseases (STDs) can also cause pelvic pain and infertility

Imaging studies

- Ultrasonography - Endometriosis can be assessed by either transvaginal ultrasonography or endorectal ultrasonography
- Magnetic resonance imaging (MRI)

Management

The dependence of endometriosis on the cyclic production of menstrual cycle hormones provides the basis for medical therapy. Thus, the following drugs form the mainstay of pharmacologic care:

- Combination oral contraceptive pills (COCPs)
- Danazol
- Progestational agent
- Gonadotropin - releasing hormone (GnRH) analogues

Surgical care for endometriosis can be broadly classified as follows:

- Conservative - When reproductive potential is retained
- Semiconservative - When reproductive ability is eliminated but ovarian function is retained
- Radical - When the uterus and ovaries are removed

Conservative surgery

Conservative procedures used in the treatment of endometriosis include the following:

- Drainage and laparoscopic cystectomy - Both procedures can be used in the treatment of ovarian endometriosis
- Ablation
- Presacral neurectomy
- Laparoscopic uterine nerve ablation (LUNA)

Semiconservative surgery

Semiconservative surgery is indicated mainly for women who have completed childbearing, are too young to undergo surgical menopause and are debilitated by the symptoms. Such surgery involves hysterectomy and cytoreduction of pelvic endometriosis.

Ovarian endometriosis can be removed surgically, because one tenth of functioning ovarian tissue is all that is needed for hormone production. (Patients who undergo hysterectomy with ovarian conservation have a 6-fold higher rate of recurrence compared to women who undergo oophorectomy.

Radical surgery

Radical surgery involves total hysterectomy with bilateral oophorectomy (TAH-BSO) and cytoreduction of visible endometriosis. Adhesiolysis is performed to restore mobility and normal intrapelvic organ relationships.

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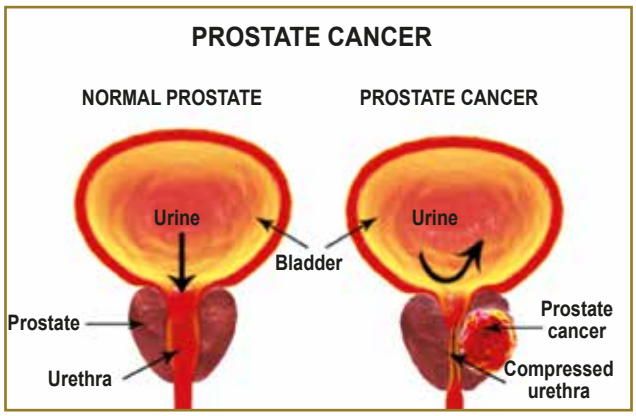
Prostate Cancer

The prostate gland is a small organ present below the bladder in men in the anterior portion of the rectum. It is responsible for producing a portion of the fluid that is present in semen. Diseases related to prostate gland become common after a certain age. Multiple factors are responsible for these diseases. “Prostate cancer” is the most serious form of prostate gland disease. It affects elderly men, especially after the age of 50. It is the second most commonly occurring cancer in men and the fourth most commonly occurring cancer overall. There were 1.3 million new cases in 2018. Age-adjusted incidence rates of prostate cancer have increased dramatically and this is largely because of the increased availability of screening for prostate-specific antigen (PSA) in men without symptoms of the disease. This test leads to detection of many prostate cancers those are small and/or would otherwise remain unrecognized, and which may or may not develop further into higher stage disease.



Growths in the prostate can be benign or malignant. Benign growths like Benign Prostatic Hypertrophy (BPH):

- Are rarely a threat to life
- Don't invade the tissues around them
- Don't spread to other parts of the body
- Can be removed and can grow back very slowly (but usually don't grow back)

Malignant growths (Prostate cancer)

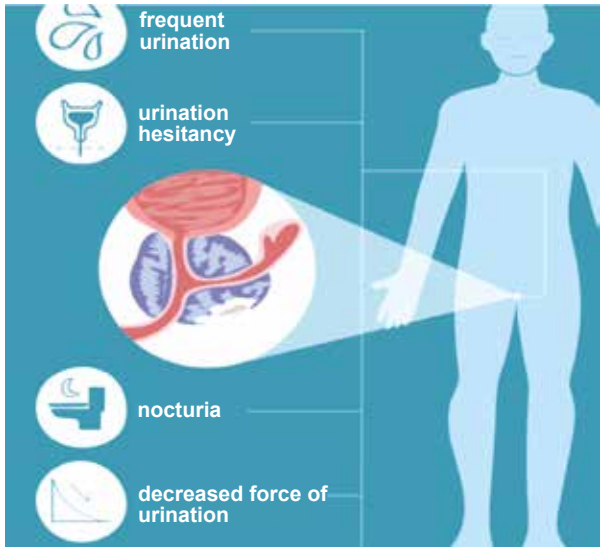
- May sometimes be a threat to life
- Can spread to nearby organs and tissues (such as the bladder or rectum)
- Can spread (metastasize) to other parts of the body (like lymph nodes or bone)
- Often can be removed but sometimes grow back

Prostate cancer cells can spread by breaking away from a prostate tumor. They can travel through blood vessels or lymph nodes to reach other parts of the body. After spreading, cancer cells may attach to other tissues and grow to form new tumors, causing damage where they land. When prostate cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the primary (original) tumor. For example, if prostate cancer spreads to the bones, the cancer cells in the bones are actually prostate cancer cells. The disease is metastatic prostate cancer, not bone cancer. For that reason, it's treated as prostate cancer in bone.

Symptoms

In its early stages, prostate cancer often has no symptoms. When symptoms do occur, they can be like those of an enlarged prostate or BPH. Prostate cancer can also cause symptoms unrelated to BPH. Symptoms of prostate cancer can be:

- Dull pain in the lower pelvic area
- Frequent urinating
- Trouble urinating, pain, burning, or weak urine flow
- Blood in the urine (Hematuria)
- Painful ejaculation
- Pain in the lower back, hips or upper thighs



- Loss of appetite
- Loss of weight
- Bone pain

Causes

No one knows why or how prostate cancer starts. Autopsy studies show 1 in 3 men over the age of 50 have some cancer cells in the prostate. Eight out of ten "autopsy cancers" found are small, with tumors that are not harmful. Even though there is no known reason for prostate cancer, there are many risk factors associated with the disease.

Risk factors

Various factors contribute to the occurrence of prostate diseases in men. These are discussed below-

- **Age:** Degeneration and malfunctioning of prostate gland occurs with age and is more promi - nent in men above 50. Prostate disease incidences are very rare in men below 40.
- **Ethnicity:** Incidences of prostate disorders are more common among African Americans and Caribbean inhabitants.
- **Geographical location:** Occurrence of prostate cancer varies according to the geographic regions because of differences in lifestyles and dietary habits. The disease is more common in North America, Northwest Europe, Caribbean Islands and Australia.
- **Heredity:** An ancestral history of prostate cancer or some other prostate diseases increases risks of the disease in the future generations.
- **Diet:** A regular diet rich in saturated fats and deficient in dietary fibers predisposes a person to prostate cancer conditions. Studies have proved that people accustomed to a lot of red meat, dairy products and high calcium intake in their diet develop prostate diseases after the age of 50.
- **Obesity:** Overweight people have been found to be suffering from high-grade prostate cancer conditions.
- **Tobacco:** Excess tobacco intake via cigarette smoking increases the risks of prostate dysfunctions.
- **Toxicity:** Direct exposure to certain chemicals can cause prostate cancer due to increased toxicity. This type of cancer is more common in firefighters who come in direct contact with different harmful chemicals on a regular basis.
- **Existing infections:** Existing prostate gland diseases such as Benign Prostate Hyperplasia (BPH) or Prostatitis cause acute inflammation of the prostate gland, leading to prostate cancer.
- **Sexually transmitted diseases:** Sexually transmitted diseases such as Chlamydia or Gonorrhea can lead to infection and inflammation of the prostate gland.
- **Vasectomy:** According to a few studies, past surgeries (like a vasectomy) can contribute to prostate diseases.

Different types of prostate cancer

Depending on the intensity and spread of the disease, prostate cancer can be classified into the following categories-

- **Localized cancer:** In this case, the cancer cells are limited to the prostate gland only and do not spread to the adjoining organs.
- **Advanced cancer:** In this condition, the cancer cells spread to the other parts of the body as well, such as lymph nodes, bones, bladder, and rectum. The disease becomes incurable in this stage.

Another classification of the disease is done as follows:

- **Adenocarcinoma:** This type of cancer develops from the gland cells, which are responsible for the production of fluid that forms the semen.
- **Sarcoma:** It is characterized by malignancy of the connective tissues and non-epithelial cells in the prostate gland.
- **Small cell carcinoma:** It is characterized by small oval cells having very little cytoplasm.
- **Neuroendocrine tumors:** It is characterized by the presence of neoplasms (tumor-forming cells) that originate from cells of endocrine and nervous systems.
- **Transitional cell carcinoma:** It can affect other parts of the renal system such as kidney, urinary bladder, urethra and ureter.

Diagnosis

Prostate specific antigen (PSA) blood test

Prostate specific antigen (PSA) is a protein made by both normal prostate cells and cancerous prostate cells. PSA levels are measured using a blood test.

The PSA test does not specifically test for cancer. A PSA reading that is above the typical range for age (e.g. above 3 Nano grams per milliliter for men aged 50−59) or that is rising rapidly may indicate the possibility of prostate cancer. However, only one in three men with a higher PSA level has cancer. The amount of PSA in the blood can be raised even when a man does not have cancer. Other factors can increase PSA levels, including benign prostate hyperplasia, recent sexual activity, an infection in the prostate or a recent digital rectal examination. In addition, some men with prostate cancer have normal PSA levels.

Free PSA test – Measures the PSA molecules in blood that are not attached to other blood proteins (free PSA). This test may be suggested if PSA score is moderately raised and it is not sure whether need a biopsy. A low level of free PSA compared to the total PSA may indicate prostate cancer.

Prostate health index (PHI) – Measures three different forms of the PSA protein.

Digital rectal examination (DRE)

The DRE may be uncomfortable, but is rarely painful. If the specialist feels a hardened area or an odd shape, further tests may be done. Abnormalities do not always indicate prostate cancer. On the other hand, a normal DRE does not rule out prostate cancer, as the examination is unlikely to pick up a small cancer or one the finger can't reach. Digital rectal examination is no longer recommended as a routine test for men who do not have symptoms of prostate cancer. However, not all prostate cancers produce high levels of PSA, so the specialist may use a DRE to check the prostate before doing a biopsy.

MRI scan

The main type of MRI used for men suspected of having prostate cancer is the mpMRI (multi- para-metric magnetic resonance imaging) scan. This combines the results of three MRI scans to provide a clearer image.

An MRI can show abnormal areas of the prostate. It can also help show whether the cancer has spread from the prostate to nearby areas.

Before an MRI scan, a dye may be injected into a vein to make the pictures clearer. Patient will lie on an examination table that slides into a large metal cylinder that is open at both ends. The scan is pain-less but can be noisy and may take 30–40 minutes. Some people feel claustrophobic in the cylinder. The magnet can interfere with some pacemakers, but newer pacemakers are MRI-compatible.

Biopsy

If the PSA test or DRE show an abnormality, a biopsy is often the next step. During a biopsy, small amounts of tissue are taken from different parts of the prostate using a special needle. A biopsy is usually done with the help of a Trans rectal ultrasound (TRUS). A small probe is inserted into the rectum and sends out soundwaves. A computer creates an image based on the echoes produced when the soundwaves meet the prostate. Using the TRUS image as a guide, inserts a thin, hollow needle into the prostate. The needle is inserted either through the rectum (Trans rectal) or through the skin between the anus and the scrotum (Trans perineal). A biopsy can be uncomfortable and for a few days there may be a small amount of blood in urine, semen or bowel motions.

Further tests

If the biopsy shows prostate cancer, other tests may be done to work out whether it has spread.

Bone scan

This scan can show whether the prostate cancer has spread to bones. A tiny amount of radioactive substance will be injected into a vein. It will need to wait for 1–2 hours while the substance moves through bloodstream to bones.

Whole body will then be scanned with a machine that detects radioactivity. A larger amount of radioactivity will show up in any areas of bone with cancer cells. The scan is painless, and the radioactive substance disappears from body in a few hours.

CT scan

A CT scan of the abdomen can show whether cancer has spread to lymph nodes in that area. A dye is injected into a vein to help make the scan pictures clearer. It will lie still on a table that moves slowly through the CT scanner, which is large and round like a doughnut. The scan itself takes a few minutes and is painless, but the preparation takes 10–30 minutes.

PET scan

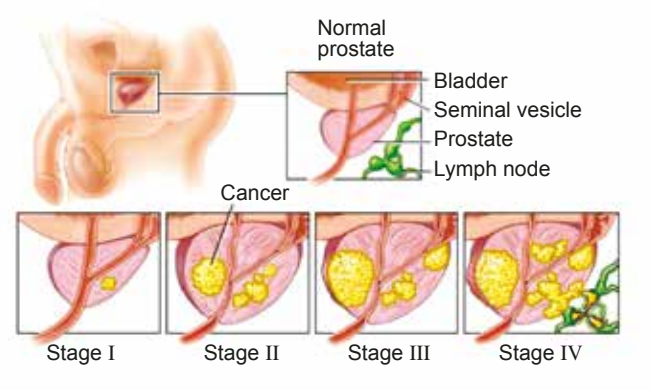
A PET (positron emission tomography) scan is a sensitive scan that may help detect cancer that has come back or spread. It involves the injection of a small amount of a radioactive solution. Cancer cells take up more of this solution and show up brighter on the scan. For prostate cancer, the solution is usually one that detects prostate specific membrane antigen (PSMA).

Grading & Staging

Once prostate cancer is confirmed by a biopsy, it's important to learn the stage (location) and grade (aggressiveness) of the tumor.

Staging

Staging is the process used to find out if the cancer has spread within the prostate or to other parts of the body, using biopsy and imaging.



More detail on staging

The standardized Tumor, Node and Metastasis (TNM) system is used to stage prostate cancer. The T category is based on the extent of the tumor itself. The N category is based on whether the cancer has spread to nearby lymph nodes. The M category is based on whether the cancer has spread beyond nearby lymph nodes.

T (Tumor) Categories

- **T1:** the tumor cannot be felt with a DRE or seen with imaging
  - **T1a:** the tumor is found accidentally during a surgery for benign prostatic hyperplasia or another prostate condition. The tumor takes up less than 5% of the removed tissue
  - **T1b:** the tumor is found accidentally during a surgery and the tumor takes up more than 5% of the removed tissue
  - **T1c:** the tumor is diagnosed with a needle biopsy, usually because of an elevated PSA
- **T2:** the tumor is confined to the prostate and can be either felt with a DRE or seen with imaging
  - **T2a:** the tumor is confined to half of one lobe of the prostate
  - **T2b:** the tumor is present to more than half of one lobe, but is not in both lobes
  - **T2c:** the tumor is present in both lobes of the prostate
- **T3:** the tumor has grown outside of the prostate and may be present in the seminal vesicles
  - **T3a:** the tumor is outside of the prostate, but is not in the seminal vesicles
  - **T3b:** the cancer is outside of the prostate and has spread to the seminal vesicles
- **T4:** the tumor has grown into tissues beyond the seminal vesicles

PROSTATE CANCER STAGES	
Stage I	- the cancer is small and only in the prostate
Stage II	- the cancer is larger and may be in both lobes of the prostate but is still confined to the prostate
Stage III	- the cancer has spread beyond the prostate to close by lymph glands or seminal vesicles
Stage III	- the cancer has spread to other organs such as the bone

N (Node) Categories

- **NX**: nearby lymph nodes were not checked for cancer
- **N0:** the tumor is not present in nearby lymph nodes
- **N1:** the tumor has spread to one or more nearby lymph nodes

M (Metastasis) Categories

- **M0:** the cancer is not present in other parts of the body beyond the nearby lymph nodes
- **M1:** the cancer is present in the body beyond the nearby lymph nodes
  - **M1a:** the cancer has spread to distant lymph nodes
  - **M1b:** the cancer has spread to the bones
  - **M1c:** the cancer has spread to other organs

Each of the stages is based on some combination of these categories.

Grading

The grade is also called the Gleason score. This score can indicate how quickly the tumor will grow and spread. To find a Gleason score, the tumor cells from the biopsy are looked at under a microscope. A number is assigned to them based on how abnormal they appear. The scale goes from 1 (non- aggressive) to 5 (very aggressive). The numbers of the two most common patterns are added together to create a Gleason Score. For example, in a biopsy where the most common cell type is a 3 and the second most common cell type is a 4, would be a Gleason Score 7. However, a biopsy where the most common cell type is a 4 and the second most common cell type is a 3 would also be considered a Gleason Score 7. A 3+4 can progress very differently than a 4+3. Today almost all patients have a Gleason Score of 6 or above.

- Gleason 6: the tumor tissue is well differentiated, less aggressive and likely to grow more slowly
- Gleason 7: the tumor tissue is moderately differentiated, moderately aggressive and likely to grow but may not spread quickly
- Gleason 8-10: the tumor tissue is poorly differentiated or undifferentiated, high aggressive and likely to grow faster and spread

Prognosis

In general, the prognosis is better when prostate cancer is diagnosed while it is localized and at a lower grade. However, it is not possible for anyone to predict the exact course of the cancer. Test results, whether the cancer has spread (its stage), how quickly it might grow (its grade) and factors such as age, level of fitness and medical and family history are all important in assessing prognosis. Prostate cancer often grows slowly and even the more aggressive cases of prostate cancer tend to grow more slowly than other types of cancer. Compared with other cancers, prostate cancer has one of the highest five-year survival rates. For many men, prostate cancer grows so slowly that it never needs treatment.

Management and treatment

There are different options for managing and treating prostate cancer.

GLEASON SCORES IN CATEGORICAL ORDER	
Gleason X	Gleason score cannot be determined
Gleason 7 or less	The tumor tissue is well differentiated, less aggressive and likely to grow more slowly
Gleason 7	The tumor tissue is moderately differentiated, moderately aggressive and likely to grow but may not spread quickly
Gleason 8-10	The tumor tissue is moderately differentiated or undifferentiated highly aggressive and likely to grow faster and spread

Active surveillance

Active surveillance is a way of monitoring prostate cancer that isn't causing any symptoms or problems. It may be suggested if the cancer is small (low volume) and slow-growing (low grade) and is unlikely to spread or cause symptoms (low risk or in some cases, intermediate risk). This is indicated by a PSA no higher than 20, stage T1–2 and Grade Group score 1 (Gleason 6 or less). Typically, active surveillance involves PSA tests every 3–6 months, digital rectal examination every six months, mpMRI scans, and biopsies at 12 months and three years. If the cancer shows signs of faster or more aggressive growth, then start treatment with the aim of curing the cancer.

Surgery

If patient have suspected early prostate cancer then the choice is radical prostatectomy. This operation aims to remove the cancer completely by removing the prostate, part of the urethra and the seminal vesicles. For more aggressive cancer, nearby lymph glands may also be removed (pelvic lymph node dissection). After the prostate is removed, the urethra will be rejoined to the bladder and the vas deferens will be sealed.

Types of radical prostatectomy

- Open radical prostatectomy
- Laparoscopic radical prostatectomy
- Robotic-assisted radical prostatectomy − Laparoscopic surgery can be performed using a robotic device, which allows the surgeon to see a three-dimensional picture and to use more advanced instruments than those used for conventional laparoscopic surgery. This is called robotic-assisted laparoscopic radical prostatectomy or RARP.
- Nerve-sparing radical prostatectomy − This involves removing the prostate and seminal vesicles and trying to preserve the nerves that control erections. This procedure is more suitable for lower grade cancers and is only possible if the cancer is not in or close to these nerves. It is best performed on younger men who have good erectile function.

Complications of prostate cancer surgery

- Nerve damage
- Loss of bladder control
- Erection problems (impotence)
- Infertility
- Penile shortening

Radiation therapy

Radiation therapy (also known as radiotherapy) is one of the treatments offered to men with early prostate cancer. It is generally offered as an alternative to surgery and has similar rates of success. It may also be offered if not well enough for surgery. Sometimes radiation therapy is used after a prostatectomy for locally advanced or more aggressive cancers or if there are signs that not all of the cancer has been removed by surgery. Radiation therapy can be delivered externally using external beam radiation therapy or internally using brachytherapy.

External beam radiation therapy (EBRT)

External beam radiation therapy (EBRT) uses targeted radiation to kill cancer cells or injure them so they cannot multiply. The radiation is usually in the form of x-ray beams. Treatment is planned to ensure there is as little damage as possible to the normal tissue and organs surrounding the prostate.

The planning sometimes involves inserting small pieces of gold (marker seeds) into the prostate to allow more accurate targeting of the radiation. This is called image-guided radiation therapy (IGRT). Usually, EBRT for prostate cancer is given every weekday for up to eight weeks, often in combination with temporary androgen deprivation therapy (ADT).

Side effects of EBRT

- Erection problems (impotence)
- Changes in ejaculation
- Infertility
- Skin irritation
- Tiredness
- Urinary problems
- Bowel problems

Brachytherapy

Brachytherapy is a type of targeted internal radiation therapy where the radiation source is placed directly within the prostate. This allows doses of radiation to be given directly inside of the prostate and limits the effects on nearby tissues such as the rectum and bladder.

Brachytherapy can be given by inserting permanent "seeds" that are radioactive for a few months or through temporary needle implants. Brachytherapy is not suitable for men who already have significant urinary symptoms or a very small or very large prostate gland.

Side effects of brachytherapy

The side effects of brachytherapy usually start 1–2 weeks after treatment and start to resolve within a couple of months. Side effects are-

- Pain when urinating
- Blood in the urine
- Poor urine flow
- Bladder irritation
- Erection problems and
- Changes in ejaculation (such as pain or dry orgasm)

Androgen deprivation therapy (ADT)

Prostate cancer needs testosterone to grow. Slowing the production of testosterone may slow the growth of the cancer or shrink it temporarily. Testosterone is an androgen so this treatment is called androgen deprivation therapy (ADT). It is also known as hormone therapy.

ADT injections

The most common form of ADT involves injections of drugs that block the body's production of testosterone. It is usually given monthly, four-monthly or six-monthly. These injections will not cure the cancer but may slow its growth for years. ADT injections are often used before, during and after radiation therapy. They are the main treatment for advanced prostate cancer, often combined with chemotherapy.

Intermittent ADT

Occasionally ADT injections may be given in cycles, with treatment continuing until PSA level is low and then stopped for a period of time. It can then be restarted if PSA rises again. This is known as intermittent ADT. In some cases, this can reduce side effects without affecting long-term prostate cancer outcomes. However, it is not suitable for all men.

Anti-androgen tablets

While ADT injections work by blocking the body's production of testosterone, anti-androgen tablets stop the testosterone reaching the cancer cells. Anti-androgen tablets are sometimes used on their own. More often, they are used with ADT injections. This combination is known as a complete or combined androgen blockade.

Side effects of ADT

ADT may cause a range of side effects because of the reduced testosterone levels in the body. These can include:

- Fatigue
- Reduced sex drive (libido)
- Erection problems
- Loss of muscle strength, weight gain
- Hot flushes, breast growth and tenderness
- Mood swings, depression, trouble with thinking and memory
- Loss of bone density (osteoporosis)
- Increased risk of other problems such as obesity, diabetes and heart disease.

Advanced prostate cancer treatment

ADT is the main treatment for advanced prostate cancer, when disease has spread beyond the prostate. In this case, the treatment will not cure the cancer but can keep it under control for months and even years. It may also reduce or eliminate the symptoms of cancer (temporary remission) and help with symptoms such as pain caused by the cancer spreading. Chemotherapy and external beam radiation therapy are also standard treatment options for advanced prostate cancer. These may be offered in combination with ADT.

Chemotherapy

Chemotherapy is the use of drugs to kill or slow the growth of cancer cells. If the prostate cancer continues to advance and spread to other parts of the body despite using ADT, chemotherapy may be suitable. Chemotherapy may also be offered as first treatment in combination with ADT It is usually given once every three weeks.

Side effects of chemotherapy may include

- Fatigue
- Hair loss
- Changes in blood counts increasing the risk of bleeding or infections; numbness or tingling in the hands or feet (peripheral neuropathy)
- Changes in nails.

Immunotherapy

Immunotherapy stimulates body's immune system to find and attack cancer cells. There are several approaches used in immunotherapy. Most of these are now in clinical trials and have not yet been approved for routine use.

Transurethral resection of the prostate (TURP)

TURP is a surgical procedure to relieve blockages in the urinary tract. It helps with symptoms of more advanced prostate cancer, such as frequent urination, but does not cure the cancer. TURP is also used to treat benign prostate hyperplasia.

Bone therapies

If prostate cancer that has spread to the bones, drugs can be used to prevent or minimize bone pain and can reduce the risk of fractures and compression on the spinal cord. Radiation therapy can also be used to reduce bone pain or to prevent or assist in the repair of fractures or spinal cord compression.

Other therapies

Newer drug therapies may be used to treat men with advanced prostate cancer that has stopped responding to ADT. These drugs, such as abiraterone and enzalutamide, are hormone tablets that can be combined with ADT to help prolong life and reduce symptoms.

Palliative treatment

Palliative treatment aims to improve quality of life by reducing cancer symptoms without trying to cure the disease. It can be used for symptom control at different stages of cancer, not just at the end of life. Palliative treatment is particularly important for people with advanced cancer. It can assist with managing symptoms such as pain and slow the spread of the cancer. Palliative radiation therapy may be used to treat pain, such as bone pain if the cancer has spread to the bones.

Life after treatment

For most people, the cancer experience doesn't end on the last day of treatment. Life after cancer treatment can present its own challenges. It may have mixed feelings when treatment ends, and worry if every ache and pain means the cancer is coming back. Some people say that they feel pressure to return to "normal life", but they don't want life to return to how it was before cancer. Taking some time to adjust to the physical and emotional changes and re-establishing a new daily routine will be helpful.

Prevention

The ultimate goal is to prevent men from ever developing prostate cancer. Although significant progress has been made, the evidence is not strong enough to form conclusive recommendations on how to prevent prostate cancer. Screening does not lead to prevention, but only to earlier detection. Improvements in diet and exercise are among the most commonly accepted strategies for prevention.

- More plant-based fats, than animal-based fats need to be consumed. Animal-based fats tend to increase the chances of prostate cancer. Evidence from several studies suggest that fish can help protect against prostate cancer because they have "good fat" particularly omega-3 fatty acids.
- Incorporating cooked tomatoes that are cooked with olive oil and cruciferous vegetables (like broccoli and cauliflower) can be done. Soy and green tea are also potential dietary components that may be helpful.
- Calcium intake should be monitored. Supplemental doses far above the recommended daily allowance should be avoided.
- Regular exercise is helpful. Men who have a BMI of 30 or more have a higher chance of developing prostate cancer. Maintaining a healthy weight can help reduce the chances of prostate cancer.
- Smoking must be avoided.
- Seeking medical treatment for stress, high blood pressure, diabetes, high cholesterol and depression is needed.
- Reducing stress in the workplace and home will improve survivorship.

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Neonatal Sepsis

Neonatal sepsis is a condition defined as a clinical syndrome characterized by signs and symptoms of infection in an infant 28 days of life or younger. This is manifested by systemic signs of infection and isolation of a bacterial or other pathogen from the bloodstream. Globally, sepsis is still one of the major causes of morbidity and mortality in neonates, despite recent advances in healthcare units.

Epidemiology

Neonatal mortality is increasingly recognized as an important global public health challenge that must be addressed to reduce child death disparities between rich and poor countries. Most of the estimated 4 million neonatal deaths per year occur in low and middle income countries. More than one-third of neonatal deaths are estimated to be due to severe infections and a quarter is due to the clinical syndrome of neonatal sepsis/pneumonia.

Incidence of neonatal sepsis varies from 7.1 to 38 per 1000 live births in Asia, from 6.5 to 23 per 1000 live births in Africa and from 3.5 to 8.9 per 1000 live births in South America and the Caribbean.

Currently, neonatal mortality rate in Bangladesh is 32 per 1000 live births which accounts for 60% of all under five deaths.

Classification of neonatal sepsis

Neonatal sepsis can be classified into two major categories depending on the onset of symptoms:

A. Early onset sepsis (EOS):

It presents within the first 72 hours of life. In severe cases, the neonate may be symptomatic at birth. Infants with EOS usually present with respiratory distress and pneumonia. The source of infection is generally the maternal genital tract. Some maternal/ perinatal conditions have been associated with an increased risk of EOS. Following risk factors seem to be associated with an increased risk of early onset sepsis:

- Low birth weight (<2500 grams) or prematurity
- Febrile illness in the mother with evidence of bacterial infection within 2 weeks prior to delivery
- Foul smelling and/or meconium stained liquor
- Rupture of membranes >24 hours
- Single unclean or > 3 sterile vaginal examination(s) during labor
- Prolonged labor (sum of 1st and 2nd stage of labor > 24 hrs)
- Perinatal asphyxia (Apgar score <4 at 1 minute)

B. Late onset sepsis (LOS):

It usually presents after 72 hours of age. The source of infection in LOS is either nosocomial (hospital-acquired) or community-acquired and neonates usually present with septicemia, pneumonia or meningitis.

Various factors that predispose to an increased risk of nosocomial sepsis include-

- Low birth weight
- Prematurity
- Admission in intensive care unit
- Mechanical ventilation
- Invasive procedures
- Administration of parenteral fluids, and use of stock solutions

Factors that might increase the risk of community-acquired LOS include-

- Poor hygiene
- Poor cord care
- Bottle-feeding, and prelacteal feeds

Risk factors

Maternal

- No prenatal care
- Malnutrition
- Low socioeconomic status
- Substance abuse
- Fever
- Active urinary tract infection (UTI)

- Chorioamnionitis
- Positive or unknown Group B Strep
- Premature rupture of membranes (ROM) or premature labor <37 weeks
- Prolonged ROM >24 hours
- Prolonged or difficult labor
- Multiple pregnancies

Neonatal

- Prematurity
- Low birth weight
- Congenital anomalies (especially ones that disrupt first line of defense, such as gastroschisis)
- Male gender
- Newborn errors of metabolism
- Asphyxia/fetal distress
- Meconium aspiration

Causative organisms

Pathogens causing neonatal infections and their antibiotic susceptibility pattern may change over time and differ between countries.

Developed countries generally identifies Group B Streptococcus (GBS) and E. coli as the dominant EOS pathogens and coagulase negative staphylococci (CONS) as the dominant LOS pathogen followed by GBS and Staph aureus. In developing countries, overall, Gram negative organisms are more common and are mainly represented by Klebsiella, E. coli and Pseudomonas. Of the Gram positive organisms, Staph aureus, CONS, Streptococcus pneumoniae and Streptococcus pyogenes are most commonly isolated. Agents that commonly cause nosocomial infection are coagulase negative staphylococci, gram-negative bacilli (E. coli, Klebsiella pneumonia, Salmonella, Enterobacter, Citrobacter, Pseudomonas aeruginosa, Serratia), Enterococci and S. aureus.

Pathogenesis

The pathophysiology of sepsis arises largely from the response of the host's innate immune system under the influence of genetic factors. Sepsis originates from a breach of integrity of the host barrier, either physical or immunological and direct penetration of the pathogen into the bloodstream, creating the septic state.

Clinical features

Non-specific features:

The earliest signs of sepsis are often subtle and nonspecific; indeed, a high index of suspicion is needed for early diagnosis. Neonates with sepsis may present with one or more of the following symptoms and signs

- Hypothermia or fever (former is more common in preterm low birth weight infants)
- Lethargy, poor cry, refusal to suck
- Poor perfusion, prolonged capillary refill time
- Hypotonia, absent neonatal reflexes
- Brady/tachycardia
- Respiratory distress, apnea and gasping respiration
- Hypo/hyperglycemia
- Metabolic acidosis

Specific features related to various systems:

Central nervous system (CNS): Bulging anterior fontanelle, vacant stare, high-pitched cry, excess irritability, stupor/coma, seizures, neck retraction.

Cardiac: Hypotension, poor perfusion, shock

Gastrointestinal: Feed intolerance, vomiting, diarrhea, abdominal distension, paralytic ileus, necrotizing enterocolitis (NEC)

Hepatic: Hepatomegaly, direct hyperbilirubinemia (especially with urinary tract infections)

Renal: Acute renal failure

Hematological: Bleeding, petechiae, purpura

Skin changes: Multiple pustules, abscess, scleroma, mottling, umbilical redness and discharge.

Diagnosis

Blood culture is the gold standard for the diagnosis of sepsis. However, it is not error free because it can be falsely sterile because of insufficient sample volumes, intermittent or low-density bacteremia or suppression of bacterial growth by earlier antibiotic administration. Positive cultures reportedly range from 8 - 73% in the diagnosis of potential neonatal sepsis. On the other hand, high rates of culture contaminants have also been reported.

Evidence of infection

- Culture from a normally sterile site (blood, CSF, other)
- Demonstration of a microorganism in tissue or fluid
- Molecular detection (blood, urine, CSF)
- Autopsy

Evidence of inflammation

- Leukocytosis, increased immature/total neutrophil count ratio
- Acute-phase reactants: C-reactive protein, ESR
- Cytokines: interleukin-6, interleukin-8, tumor necrosis factor
- Pleocytosis in CSF or synovial or pleural fluid
- DIC: fibrin degradation products, D-dimer

Evidence of multiorgan system disease

- Metabolic acidosis: pH, PCO2
- Pulmonary function: PO2, PCO2
- Renal function: Blood urea nitrogen, creatinine
- Hepatic function: Bilirubin, ALT, AST, ammonia, PT, APTT
- Bone marrow function: Neutropenia, anemia, thrombocytopenia

Management

Empirical treatment

Treatment is most often started before a definitive causative agent is identified. It consists of a penicillin, usually ampicillin, plus an aminoglycoside such as gentamicin. In nosocomial sepsis, the flora of the NICU must be considered; however, generally, staphylococcal coverage with vancomycin plus an aminoglycoside such as gentamicin or amikacin is usually begun.

Specific treatment

Specific or continuing therapy is based on culture and sensitivity results, clinical course and other serial laboratory studies. Monitoring for antibiotic toxicity is important as well as monitoring levels of aminoglycosides and vancomycin.

Supportive care

- Thermal care: Thermo-neutral environment should be ensured
- Respiratory: Adequate oxygenation with blood gas monitoring, and initial oxygen therapy or ventilator support (if needed) must be ensured
- Cardiovascular: Blood pressure and perfusion must be supported to prevent shock. Volume expanders like normal saline and inotropes such as dopamine or dobutamine may be needed. Intake and output of fluids should be monitored
- Hematologic: DIC and neutropenia should be treated as per standard protocol
- CNS: Seizures and SIADH should be addressed with proper attention
- Metabolic: Hypoglycemia, hyperglycemia and metabolic acidosis should monitored and treated accordingly

Complications

The short term complications of neonatal sepsis include respiratory failure, pulmonary hypertension, cardiac failure, shock, renal failure, liver dysfunction and cerebral edema. Some of the long term complications include-developmental delays, sensory and neurological dysfunction.

Conclusion

Neonatal sepsis has a high risk of morbidity and mortality, particularly with lower gestations and birthweights and both maternal and neonatal factors had contributed to the risk of neonatal sepsis.

Onset of neonatal sepsis is higher in the first week of neonate's life. Strengthening of antenatal screening of mothers, perinatal care of newborns and interventions of babies born with complications are recommended.

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Intestinal worms, or parasitic worms, are simple organisms that feed off the human body. Many people recognize the more common varieties, such as tapeworms, hookworms and roundworms, but may be less aware of the others. The risk of parasitic infection is higher in rural or developing regions. The risk is great in places where food and drinking water may be contaminated and sanitation is poor.

Intestinal worms can cause many symptoms in the body, some of which are similar to the symptoms of other gut disorders. A quick and thorough diagnosis is crucial in each case to avoid complications. Physicians may use anti-parasitic medications or other treatments to help get rid of the worms. Although intestinal worms may seem scary, most people respond well to treatment.

Types of worms that cause infection

There are many different types of intestinal worm that can affect people. Below, some of them are described in detail.

Hookworm (Ancylostoma & Necator)

A hookworm is a worm that usually enters a person's body through unsanitary soil. The name of the worm describes the way that one end of its body tapers off into a needle or hook shape.

Hookworm (Under a microscope)

Hookworms take up space in the small intestine, where they lay eggs, which pass out of the body through the feces. When the eggs hatch, the larvae can potentially enter through the skin of another person. People are at risk if they come into contact with the fecal matter or with soil containing contaminated feces as fertilizer.

Most people with a hookworm have no symptoms. Some people may show typical gastrointestinal symptoms and this may be more common with first time infections.

Roundworm (Ascaris)

Ascaris is similar to a hookworm, although it is only a few inches long. It lives in contaminated soil, so it only enters the body when people ingest the eggs. Inside the body, this worm lives in the intestines.

Roundworm

People with an ascariasis infection often show few to no symptoms. However, severe infections may cause intestinal blockages or impair growth in children.

Tapeworm (Taenia)

A tapeworm is a type of flatworm that lives in the intestine, where it attaches itself to the intestinal wall. Most people with tapeworms experience either no symptoms or very mild symptoms.

There are a few different types of tapeworm. Some tapeworms live in water and drinking unclean water may allow them into the body. Other tapeworms live in meats, such as beef or pork, and ingesting unclean or raw meats may expose the person to them.

Tapeworms are flat and tend to be long, usually between 3 and 10 meters depending on the type of worms and live in a human for up to 30 years.

Pinworm (Enterobius)

A pinworm is a small, thin roundworm that is about the size of a staple. Pinworms are relatively harmless and sometimes live in the colon and rectum of humans. Someone who has the worms can pass them onto someone else through direct contact or by sharing a contaminated object with them.

Pinworms commonly cause itching around the anus, which can be severe enough to make sleeping difficult. Symptoms appear during the night as this is when the female pinworms crawl out of the anus to lay their eggs on the surrounding skin.

Flukes

Flukes are another type of flatworm. Flukes may be more common in animals, although it is possible for humans to contract these parasitic worms as well.

Flukes are small and have a rounded leaf shape. Humans get them by accidentally eating or ingesting them, either in drinking water or freshwater plants, such as watercress. Once inside the body, adult flukes occupy the bile ducts and liver.

Liver Fluke (Fasciola hepatica)

Some people do not have any symptoms, but others may experience symptoms months or even years after first ingesting the parasite. These people may experience inflammation of the bile ducts or complete blockages. They may have liver enlargement or unusual readings on a liver test.

Trichinella

Trichinella worms are another type of roundworm that may pass to humans who eat undercooked or raw meats that contain the live larvae. The larvae then grow in the intestines. On reaching their full size, the Trichinella worms may leave the intestines and live in other tissues, such as the muscles.

Risk factors

The vast majority of these infections occur in developing countries where sanitation is poor. However, intestinal worms are still possible in developed areas.

Some people may be more at risk of contracting an intestinal worm. These people include those with a weakened immune system, such as older people and people living with HIV. Pregnancy does not increase the risk of getting intestinal worms, but intestinal worms may pose a more signifi- cant health risk for people who are pregnant. Some anti-parasitic medications may not be safe during pregnancy.

Symptoms

Each species of intestinal worm may cause different symptoms and the symptoms may also vary from person to person. However, some common signs and symptoms of intestinal worms include:

- Loss of appetite
- Fatigue
- Abdominal pain
- Bloating
- Nausea
- Weight loss
- Diarrhea

In some cases, the person may start passing segments of the intestinal worm in their stool. In rarer cases, the intestinal worm may lead to severe blockages in the intestine, making it difficult for the person to have a bowel movement.

In addition, tapeworms can cause:

- Lumps or bumps
- Allergic reaction
- Fever
- Neurological problems such as seizures

It may take weeks or months to notice additional symptoms of fluke infection. These may include:

- Fever
- Fatigue

Additional symptoms of hookworms include:

- Itchy rash
- Anemia
- Fatigue

As trichinosis worms travel through the bloodstream and enter other tissue or muscles, they can cause:

- Swelling of the face

- Muscle pain and tenderness
- Headache
- Light sensitivity
- Conjunctivitis

Complications

Intestinal worms may increase the risk of certain health issues in the body. Some intestinal worms may make it difficult for the body to absorb protein or cause a loss of blood and iron, which could lead to anemia. Those may also affect a person's ability to pass food through the intestines.

This issue could ultimately lead to an intestinal blockage, which requires immediate treatment. Tapeworms may also lead to human cysticercosis, which is known as a potentially serious disease that can damage the eyes and cause seizures.

Diagnosis

Several different tests can help to diagnose intestinal worms. These tests may include:

- A fecal test involves checking a stool sample for parasites, larvae or eggs.
- A colonoscopy can be useful when stool samples turn up no evidence of parasites as a cause of diarrhea.
- A blood test can be used to detect some types of parasites in the blood.
- Imaging tests like MRI, CT scan or X-rays can be used to detect organ injury caused by parasites.
- A tape test involves placing clear tape around the anus. The tape can be examined under a microscope for the presence of pinworms or their eggs. But even with the naked eye, someone may able to see evidence of pinworms around a child's anus within the first few hours of falling asleep.

Treatment

Although intestinal worms sound a bit frightening, treatment is often straightforward. In some cases, the person may not need any treatment at all. A healthy immune system may be sufficient to manage some types of tapeworm without the need for medication. In other cases, one or more anti-parasitic medications may be needed to get rid of the intestinal worm.

At first, monitoring the patients first to see if their body can take care of the worm before moving on to medication can be done. During this period, the individual should report any symptoms to the doctor. Some signs and symptoms may indicate that further treatment is necessary. These may include:

- Vomiting
- High fever that lasts for more than a couple of days
- Extreme fatigue
- Dehydration
- Changes to the color of stool
- Blood in the stool

The type of worm will determine the best treatment option. Praziquantel is prescribed to clear out a tapeworm. This drug paralyzes the worm, forcing it to detach from the intestinal wall.

In the case of hookworms, anthelmintic drugs, such as mebendazole or albendazole are prescribed. Triclabendazole may help treat flukes, while pinworm infections often respond well to both over-the-counter and prescription drugs.

In very severe cases in which parasites have invaded other parts of the body, additional treatments like surgery and other medications to address additional problems caused by the parasites may be necessary. It may take longer to recover if there's:

- A severe case
- Compromised immune system
- A coexisting health condition

Soil-transmitted worm infections

Soil-transmitted worm infections are among the most common infections worldwide and affect the poorest and most deprived communities. They are transmitted by eggs present in human faeces which in turn contaminate soil in areas where sanitation is poor. The main species that infect people are the roundworm (Ascaris lumbricoides), the whipworm (Trichuris trichiura) and hookworms (Necator ameri- canus and Ancylostoma duodenale). More than 1.5 billion people or 24% of the world's population, are infected with soil-transmitted worm infections.

Common Worm Infestations

Infections are widely distributed in tropical and subtropical areas, with the greatest numbers occurring in sub-Saharan Africa, the Americas, China and East Asia.

- The worms feed on host tissues, including blood, which leads to a loss of iron and protein.
- Hookworms in addition cause chronic intestinal blood loss that can result in anaemia.
- The worms increase malabsorption of nutrients. In addition, roundworm may possibly compete for vitamin A in the intestine.
- Some soil-transmitted worms also cause loss of appetite and, therefore, a reduction of nutritional intake and physical fitness. In particular, T. trichiura can cause diarrhea and dysentery.

People with infections of light intensity (few worms) usually do not suffer from the infection. Heavier infections can cause a range of symptoms including intestinal manifestations (diarrhea and abdominal pain), malnutrition, general malaise and weakness, and impaired growth and physical development. WHO recommends periodic medicinal treatment (deworming) without previous individual diagnosis to all at-risk people living in endemic areas. Treatment should be given once a year when the baseline prevalence of soil-transmitted helminth infections in the community is over 20%, and twice a year when the prevalence of soil-transmitted helminth infections in the community is over 50%. The WHO recommended medicines – albendazole (400 mg) and mebendazole (500 mg) – are effective, inexpensive and easy to administer.

Prevention

While it may not be possible to get rid of all possible sources of intestinal worms, it is still essential to take certain steps to avoid them where possible. One of the more important aspects of prevention is basic sanitation. For instance, people should always wash their hands at these times:

- Before eating
- Before food prep
- After touching raw meat
- Before & after using the toilet
- After changing a diaper or caring for someone who's sick
- After touching an animal or animal waste

The following tips can often help to prevent parasitic worm infection:

- Never eating raw or undercooked meat, fish, or poultry.
- Avoidance of cross-contamination during food prep by keeping meat separate from other foods.
- Disinfecting all cutting boards, utensils and countertops that touched raw meat.
- Never eating watercress or other freshwater plants raw.
- Avoidance of walking barefoot in places where soil may be contaminated by feces.
- Cleaning up animal waste.

People should never eat undercooked or raw meat

It's more difficult to prevent parasitic worm infection when someone is traveling to foreign countries, especially in regions where sanitation is a problem. That's when someone should be extra vigilant. When traveling, following things should be kept in mind-

- Awareness about the preparation of food
- Drinking only bottled water
- Carrying hand sanitizer.

References:

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Test Yourself - 49

Correct Answers :

1.	a	2.	d	3.	c	4.	b	5.	b	6.	a

CONGRATULATIONS!

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Test Yourself - 50

1. **The followings are true for "Prostate Cancer" except:**
   a. Prostate disease incidences are very rare in men below 40 years.
   b. Only one in three men with a higher PSA level has cancer.
   c. It is the second most commonly occurring cancer in men and the third most commonly occurring cancer overall.
   d. The main type of MRI used for men suspected of having prostate cancer is the mpMRI scan.

2. **All the followings are correct for "Endometriosis" except:**
   a. Early age of menarche, long menstrual cycle, delayed childbearing are among the risk factors.
   b. The most common finding is nonspecific pelvic tenderness.
   c. It is an estrogen-dependent disease.
   d. Pelvic endometriosis typically occurs in women aged 25 – 30 years.

3. **All the below are true for "Prostate Cancer" except:**
   a. The prognosis is better when it is diagnosed while it is localized and at a lower grade.
   b. Tumor category 2 (T2) means the tumor is not confined to the prostate.
   c. Nerve damage, loss of bladder control, infertility are among the complications of prostate cancer surgery.
   d. Men who have a BMI of 30 or more have a higher risk of developing prostate cancer.

4. **All the followings are correct for "Endometriosis" except:**
   a. Estrogen pill relieves pain in as many as 80-85 percent of patients with endometriosis related pelvic pain.
   b. Tenderness on palpation of posterior fornix is the most common findings.
   c. Laparoscopy is considered the primary diagnostic modality for endometriosis.
   d. Sexually transmitted diseases (STDs) can also cause pelvic pain and infertility.

5. **The followings are right for "Neonatal Sepsis" except:**
   a. Blood culture is the gold standard for the diagnosis of sepsis.
   b. Early onset sepsis presents within the first 48 hours of life.
   c. Respiratory failure, pulmonary hypertension, cardiac failure are among the short term complications.
   d. Onset of neonatal sepsis is higher in the first week of neonate's life.

6. **All the followings are correct for "Common Worm Infestations" except:**
   a. The risk of parasitic infection is higher in rural and developing regions.
   b. Some intestinal worms make it difficult for the body to absorb protein.
   c. Soil transmitted worm infections are among the least common infections worldwide.
   d. WHO recommends periodic medicinal treatment to all at- risk people living in endemic areas.

Soon our officials will be visiting you with a token of our appreciation

Seclo® MUPS 20 Tablet

FIRST TIME IN BANGLADESH

Omeprazole 20 mg

Better Acid reducer than Pantoprazole

1. Can be taken anytime, **before** or **after meal**
2. Safe for **Pregnant Women**
3. Safe for Children **over 02 years**

Once daily

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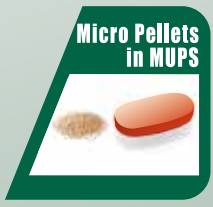

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Reduces tablet burden

for treating Hemorrhoids & Venous diseases

Dosage guideline of **Hemorif® DS**

Indication	Dose	Duration
Acute Hemorrhoids	**1 + 1 + 1**	4 days
	1 + 0 + 1	3 days
	Once Daily	As maintenance dose
Chronic Hemorrhoids	**Once Daily**	3 months
Chronic Venous Insufficiency (CVI)	**Once Daily**	2-6 months

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