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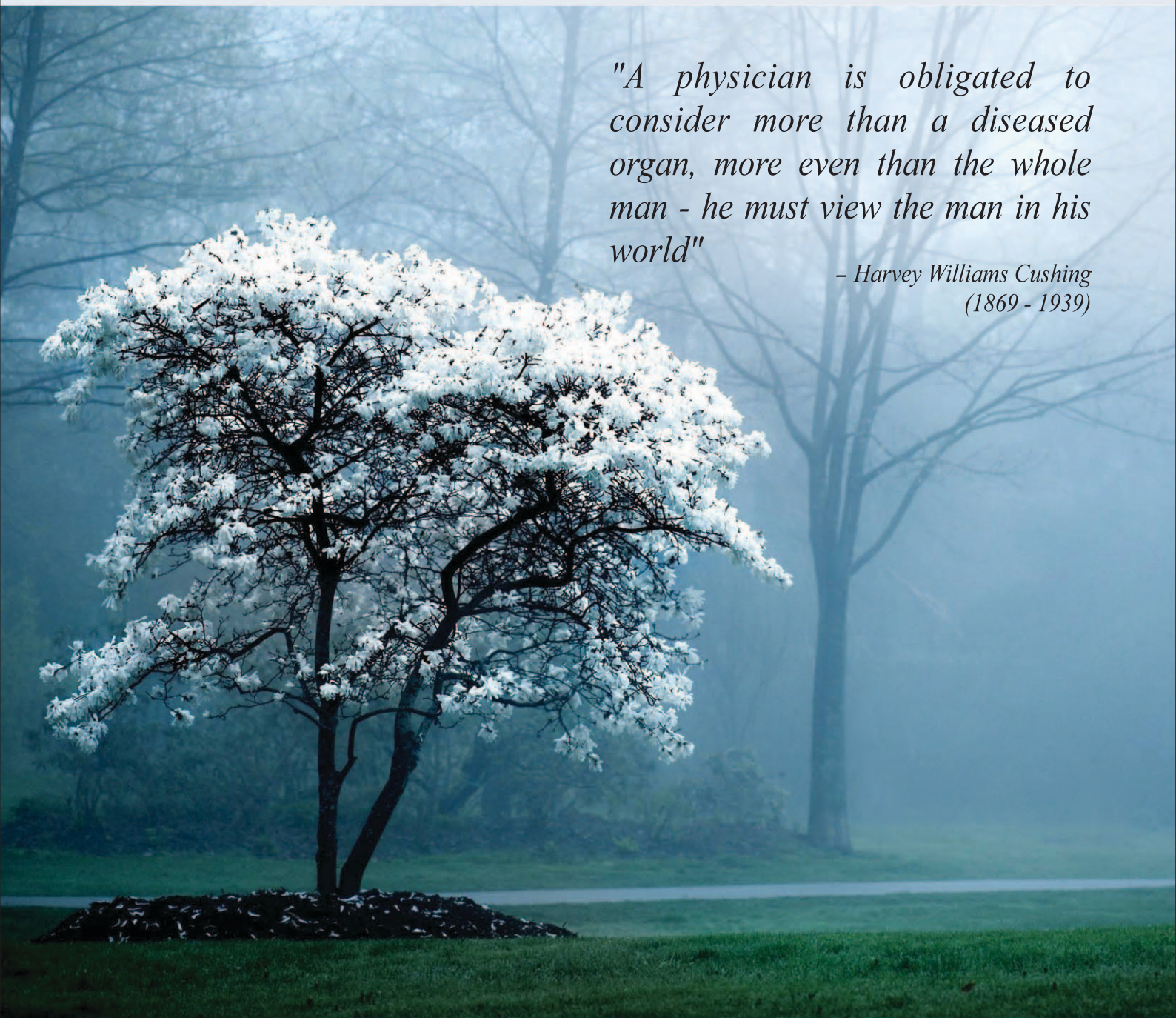
The essence of medical practice



Management of urinary tract infection

"A physician is obligated to consider more than a diseased organ, more even than the whole man - he must view the man in his world"

*- Harvey Williams Cushing
(1869 - 1939)*



Harvey Williams Cushing was an American neurosurgeon. He is a pioneer of brain surgery and first person who described Cushing's disease. Together with Ernest Sachs, he is known as the "father of neurosurgery". In the beginning of the 20th century, Cushing developed many of the basic surgical techniques for operation of the brain. This established him as one of the foremost leaders and experts in the field. Under his influence neurosurgery became a new and autonomous surgical discipline.

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EDITORIAL

Dear Doctor,

Happy New Year!

Welcome to the first issue of Info Medicus of 2017. With our earnest efforts followed by your constant encouragement we have always tried to implement you with the recent updates in the health segment around the globe at your desk. Your wholehearted participation and queries regarding previous issues have illuminated the overall scenario of Info Medicus.

Info Medicus is an open access newsletter that publishes review articles, case reviews and variety of topics related to all aspects of medicine. It brings to light the various clinical advancements and research developments attained over the world and thus help the specialty forge ahead.

We have highlighted "Management of urinary tract infection" as our review article which is nowadays have become a challenging area of medicine. We hope that you will be very eager to read our topic current health as very interesting news waits for you. Besides these other sections are presented as usual.

We appreciate your feedback regarding this issue. Your feedback will assist us to better meet your needs and to improve this service.

On behalf of the editorial board, we wish you all a very prosperous, healthy and successful life in the year ahead.

With warmest thanks,



(Dr. S. M. Saidur Rahman)
Deputy General Manager
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Management of urinary tract infection

Urinary tract infection (UTI) is a common contagion among men, women and children but the incidence is quite high among women due to their physiology. In simple terms, it can be referred as a condition which women will certainly encounter during the span of their life time and the prevalence is higher among women during pregnancy. As the name indicates, the infected parts involve the urinary tract comprising of the upper and lower urinary tract. The infection is named after the part that gets infected and is referred to as cystitis and pyelonephritis. The symptoms associated with the bladder and kidney infections are contrasting which includes painful and frequent urination in case of cystitis as a result of bladder infection whereas conditions like high fever and flank pain are commonly experienced in case of kidney contagion which is referred to as pyelonephritis. This prevalence of the infection among children and elderly people is not clearly understood and is currently under study. Bacteria are the prime responsible for conferring the infection among humans but the role of certain fungi and viruses cannot be over looked. However, the incidence of UTI as a result of viral or fungal infection is considered to be rare phenomena. Though the infection seems to be harmless in the initial

stages, the patient shows a variety of symptoms as the stage progresses and can lead to death in severe circumstances. Urinary tract infection can be a consequence of poor diagnosis and is regarded as the common hospital acquired infection. The infection encompasses a diverse group of clinical syndromes and diseases that differ in epidemiology, etiology, location severity of the condition. In addition to this, it also vary in expressed local symptoms, frequency of recurrence, extent of damage caused, presence of complicating factors and the risk from their reiterate incidence. The occurrence of bladder infection is usually followed by kidney infection and results in blood borne infection and in severe circumstances can lead to dire consequences including death. However, UTI is capable of claiming lives under severe circumstances and proper treatment results in quick recovery from the contagion.

Epidemiology

Urinary tract infections are a leading cause of morbidity and health hazards in persons of all ages. It is the second most common type of infection in the body and accounts for around 8.1 million visits to health care providers each year. Sexually active young women are

disproportionately affected, but several other populations, including elderly persons and those undergoing genitourinary instrumentation or catheterization, are also at risk. Over 50 percent of all women will experience at least one UTI during their lifetime, with 20 to 30 percent experiencing recurrent UTI¹¹. Recurrent urinary tract are common in women and associated with considerable morbidity and health care use. One study showed that of college women with a first UTI, 27 percent had at least one culture confirmed recurrence within the following six months, and 2.7 percent experienced a second recurrence over the same period. In a primary care setting, 53 percent of women older than 55 years and 36 percent of younger women had a recurrence within one year³. Women are more likely to develop UTI than men, because the urethra is shorter in women than in men, and it is closer to the anus, making it easier for the bacteria to be transferred to the bladder. Children (7 percent of girls and 2 percent of boys) will have a symptomatic, culture confirmed UTI by six years of age. The prevalence of UTI in febrile infants is greater with younger age, with a rate of nearly 7 percent among febrile newborns⁵. Urinary tract infections are also common during pregnancy. In pregnant women, the incidence of UTI can be as high as 8 percent⁶.

Classification

The urinary tract infection can be classified according to site, symptoms and complicating factors. However, the classification of the urinary tract infection are given in table 1.

Etiology

Escherichia coli infection remains the most common organism in nearly all patient groups. It accounts for about 80 to 90 percent of UTI in adult and pregnancy and about 85 percent of UTI in children. Other gram negative rods such as *Proteus mirabilis* and *Klebsiella pneumonia* are also common. Gram positive organisms such as group B streptococcus and *Staphylococcus saprophyticus* are less common causes of UTI. *Proteus mirabilis* a common uropathogen in patients with indwelling catheters, spinal cord injuries, or structural abnormalities of the urinary tract. *Klebsiella* and group B streptococcus infections are relatively more common in patients with diabetes. Less common organisms that may cause UTI include enterococci, *Gardnerella vaginalis* and *Ureaplasma ureolyticum*.

Defenses of the urinary tract

Host defenses

Several factors relating to host defenses determine susceptibility to urinary tract infection which are given below:

- Biochemical properties such as acid pH, high urea content and high osmolality, mucosal mucopolysaccharide within urinary tract as well as systemic and local antibody production normally makes the bacterial survival difficult in urine
- Periurethral and urethral region: Normal flora in these areas contain lactobacilli, coagulase negative staphylococcus, corynebacterium and streptococci that form barriers against colonization
- Urine: High osmolality, high urea concentration, low pH, high organic acid are protective
- Bladder: Epithelium expresses toll like receptors (TLRs) that recognize bacteria and initiate immune inflammatory response with the help of neutrophils, macrophages, eosinophils, NK cells, mast cells and dendritic cells. Adaptive immune response then predominates T and B lymphocytes. Induced exfoliation of cells also occurs to allow excretion of bacterial colonization
- Kidney: Local immunoglobulin or antibody synthesis in the kidney such as IgG and IgA occurs in response to infections

Table 1: Classification of urinary tract infection

According to site

- Pyelonephritis (upper urinary tract infection) is the inflammation of the kidney associated with diffuse pyogenic infection of the renal pelvis and parenchyma
- Cystitis (lower urinary tract infection) is the inflammation of the urinary bladder and its mucosa
- Urethritis (lower urinary tract infection) is the inflammation of the urethra

According to symptoms

- Asymptomatic UTI indicates presence of bacteria in the urine but producing no symptoms
- Symptomatic UTI indicates presence of bacteria in the urine and presence of symptoms

According to complicating factors

- Uncomplicated UTI where infection occurs in a patient with anatomically and functionally normal urinary tract
- Complicated UTI occurs when there is anatomical or functional abnormality in the urinary tract such as enlarged prostate, kidney stones or bladder stone, diverticulum, if the patient is immune compromised due to diabetes mellitus or acquired immunodeficiency syndrome, or if infection occurs by a multidrug resistant bacteria

Alterations in host defense mechanism

- Urinary tract obstruction: It increases the susceptibility to UTI but does not necessarily predispose to infection
- Vesicoureteral reflux: The association of vesicoureteral reflux in UTI may eventually lead to renal scarring
- Underlying disease: Diabetes mellitus, sickle cell disease, gout, analgesic abuse, cirrhosis and human immunodeficiency virus can lead to urinary tract infection
- In diabetes mellitus there is glucose in urine, which may contribute to infections in the upper urinary tract due to immune compromise
- Papillary necrosis may occur due to analgesic abuse, sickle cell disease, cirrhosis and gout
- Urinary tract infection is five times more prevalent in the population affected by HIV
- Pregnancy: Bacteriuria and pyelonephritis increases during pregnancy in untreated patients
- Spinal cord injury with high pressure bladder: High morbidity and mortality occurs in this disease due to bacteriuria

Diagnosis

Urinary tract infection can be diagnosed by clinical feature and some investigations.

Clinical feature

The clinical features of urinary tract infection can depend upon age, gender and the specific part of the urinary tract that has been affected. Each type of UTI may result in more specific symptoms, depending on which part of the urinary tract is infected which is given in table 2.

Table 2: Clinical features of urinary tract infection

- Pain in upper back and both flanks
- High fever with chills and rigor
- Nausea and vomiting
- Abdominal pain
- Increased frequency of urination
- Passing small amounts of urine
- Painful urination
- Sometimes presence of blood in urine
- Burning sensation while urinating
- Passing of strong smelling and cloudy urine

Investigations

Urine analysis: The method of urine collection is important to distinguish between contamination and true colonization of the urine by the bacteria. The commonly used methods of collection are clean catch midstream voided urine, catheterized urine, suprapubically aspirated urine. The most variable is the clean catch midstream voided urine, especially in females because the contamination of urine by vaginal or perineal organisms is common during collection. Dipstick urinalysis, however, is a widely used diagnostic tool. A dipstick urinalysis positive for leukocyte esterase or nitrites in a midstream void specimen reinforces the clinical diagnosis of UTI. Leukocyte esterase is specific (94 to 98 percent) and reliably sensitive (97.5 to 96 percent) for detecting uropathogens equivalent to 100000 colony forming units (CFU) per ml of urine.

Urine culture: Urine culture is required for diagnosis of UTI. Accurate urine culture and susceptibility information are necessary to best target and eradicate the pathogens in complicated UTI. These infections are usually associated with high count bacteriuria (greater than 100,000 CFU per ml of urine). In uncomplicated UTI, a colony count of 100 CFU per ml has a sensitivity of 95 percent and a specificity of 85 percent, but the infectious diseases society of america (IDSA) recommends using a colony count of 1,000 CFU per ml for symptomatic patients. Culture may be necessary in patients with recurrent UTI to confirm the diagnosis and guide antibiotic therapy. To establish the diagnosis of UTI in children, clinicians should require 50000 colony forming units per ml of uropathogen cultured from a urine specimen.

Methods to localize infection: Upper urinary tract infections may be isolated using the Stamey test in which the bladder urine is cultured by thorough saline wash before and after catheterization. If the post-wash bladder culture is positive, it indicates upper urinary tract bacteria entering into the bladder. Combining bladder washing with ureteral catheterization is a more precise way to localize the upper urinary tract infection.

Imaging: An ultrasound evaluation of the upper urinary tract should be considered to differentiate urinary obstruction or renal stone disease in acute uncomplicated pyelonephritis. Febrile infants and young children with UTI should undergo renal and bladder ultrasonography. Imaging traditionally has been recommended in children with recurrent UTI. Further imaging may be required in those patients who have fever following 72 hours of treatment.

Management

General management

There are several measures that can be taken in order to reduce the risk of developing a UTI such as:

- Drinking plenty of fluids such as water, fruit juices in order to keep the body always hydrated
- It is commonly recommend to drink cranberry juice. Cranberry products seem to notably reduce the recurrence of symptomatic cystitis
- Avoid fluids such as alcohol and caffeine as they can irritate the bladder
- Urinate frequently and avoid delay in urination
- Keep the genital area clean
- Always wear cotton and loose fitting clothing to keep the area around the urethra dry
- Diabetic patients should keep their sugar levels under control

Pharmacological management

Uncomplicated UTI: Many studies have focused on the treatment length of standard therapies. A study comparing a three day course of ciprofloxacin 100 mg twice daily, ofloxacin 200 mg twice daily, and trimethoprim-sulfamethoxazole 160/800 mg twice daily, found that all three had comparable efficacy in managing uncomplicated urinary tract infection. Another study comparing a short course (three days) of ciprofloxacin with seven day course of trimethoprim-sulphamethoxazole and nitrofurantoin 100 mg twice daily found that ciprofloxacin had superior bacteriologic eradication rates after short term course. Fluoroquinolones have become popular treatments for patients with uncomplicated urinary tract infections because of *Escherichia coli* emerging resistance to other common medications.

Complicated UTI: Treatment most often includes a fluoroquinolones, administered orally if possible. In patients who are unable to tolerate oral medication or who require hospitalization for concomitant medical problems, appropriate initial therapy may be parenteral administration of cephalosporin with antipseudomonal activity such as ceftazidime, cefoperazone, cefipime, aztreonam, imipenemcilastatin or the combination of an antipseudomonal penicillin such as ticarcillin, mezlocillin, piperacillin with an aminoglycoside.

UTI during pregnancy: Pregnant women should be treated when bacteriuria is identified. The choice of antibiotic should address the most common infecting organisms. The antibiotic should also be safe for the mother and fetus. Ampicillin has been the drug of choice, but in recent years *Escherichia coli* has become increasingly

resistant to ampicillin. Nitrofurantoin is a good choice because of its high urinary concentration. Alternatively, cephalosporins are well tolerated and adequately treat the important organisms. Fosfomycin is a new antibiotic that is taken as a single dose. Sulfonamides can be taken during the first and second trimesters but, during the third trimester, the use of sulfonamides carries a risk that the infant will develop kernicterus, especially preterm infants. Other common antibiotics (e.g., fluoroquinolones and tetracyclines) should not be prescribed during pregnancy because of possible toxic effects on the fetus.

Recurrent UTI: As the number and frequency of recurrences increase, the treatment strategy is less well defined. Fluoroquinolones and nitrofurantoin become better options as suspicion for trimethoprim-sulfamethoxazole resistance increases. Patient with recurrent UTI should be counseled about risk factors such as spermicide use, frequent sexual intercourse, and new sex partners, as well as about preventive measures.

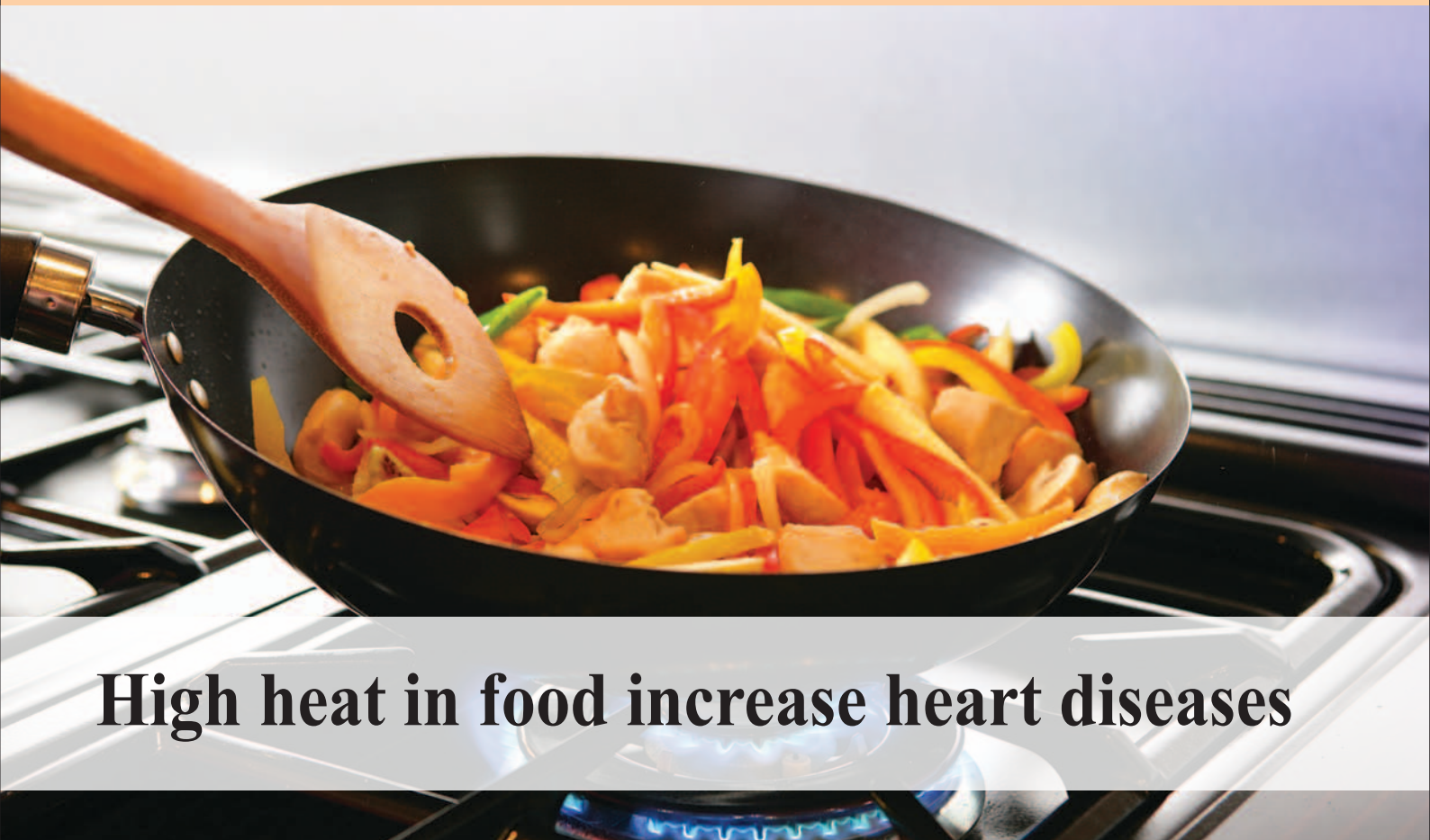
UTI in children: Trimethoprim-sulfamethoxazole offers good coverage and is inexpensive. It is given in suspension form in a dosage of 4 mg trimethoprim per kg twice daily. Other commonly used antibiotics include amoxicillin, in a dosage of 10 mg per kg three times daily, and nitrofurantoin, in a dosage of 2.5 mg per kg three times daily. Cephalosporins may be indicated if infection with a more resistant organism is suspected. Ciprofloxacin is not approved for use in children. The American Urologic Association recently developed practice guidelines for the management of reflux which is antibiotic prophylaxis. The most frequently used agents are nitrofurantoin, in a dosage of 1 to 2 mg per kg once daily, and trimethoprim-sulfamethoxazole, in a dosage of 2 to 4 mg trimethoprim per kg once daily.

Summary

Urinary tract infections are both prevalent and costly. Bacterial UTI those are different from urinary colonization results from the interaction of multiple host and bacterial factors. The diagnosis of UTI is made by urine examination and a clinical picture of illness. A broad differential diagnosis can exist with urinary tract symptoms that include nonbacterial pathogens, and non infectious conditions. Effective treatment of bacterial UTI depends on the pathogen, severity and site of illness, and other complicating patient factors.

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High heat in food increase heart diseases

Eating crisp fried food is leading to increase heart disease as we all know extra oil is bad for our heart. A new study has been found that the real problem is may be the temperature in which we are cooking our food and not the amount of oil we are using for cooking or frying. Raj Bhopal, professor of public health at the University of Edinburgh researched that when food are heated up to a high temperature, new compounds are created, and some of them are known to be harmful for health. He also determines that when food are cooked at high temperature, they release chemicals known as neoformed contaminants (NFCs). This group includes trans fatty acids or trans fats that increase the risk of heart disease. The researchers believe that South Asians including Pakistan, India, Bangladesh, Bhutan, Maldives, and Sri Lanka have a four times greater risk of heart disease than the Chinese population because they cook food in hot oil at high temperature.

Bhopal confirmed his research by investigating the people living in Scotland. In Scotland the rates of heart attack are in the Pakistani population and the next group were the Indians. At the bottom of the list were the Chinese. This research made him surprised because all the above three communities had long been settled in Scotland and lived reasonably similar lifestyles. But the Chinese have lesser risk

for heart disease because the explanation has to be around food. Bhopal and his team reviewed that the Indian snacks there were vast amount of trans fatty acids but in Chinese snacks there were less than 1 percent of trans fatty acids.

Bhopal and his team also found other byproducts such as glycogen end products that are produced on heating oil to high temperature. These are also known to increase the likelihood of heart disease. The team used the example of cooking a chicken to highlight the vast differences in how much of these byproducts are produced. When a chicken is boiled, this cooking process releases an average of 1,000 glycogen end products, whereas roasting and frying produce 4,000 and 9,000 respectively.

Michael Miller, Professor of cardiovascular medicine at the University of Maryland Medical Center performed a study that showed the perfectly healthy oils become unhealthy by heating and frying. Both Bhopal and Miller suggest reducing the heat in the kitchen. Bhopal advices to have snacks cooked in olive oil rather than having snacks that are cooked in high temperature oils. He states that he himself now switched to cooking olive oil because it does not heat up to a very high temperature.

Reference: www.cnn.health



Baby who was born twice

A baby was removed from womb for surgery at 23 weeks of pregnancy, then returned to womb for up to 36 weeks of pregnancy. Mother's name is Margaret Boemer and baby's name is Lynlee. Margaret Boemer went for a routine Ultrasound 16 weeks into her pregnancy with her third child. She was shocked to learn that her baby had a sacrococcygeal teratoma. Sacrococcygeal teratoma is a tumor that develops before birth and grows from a baby's coccyx, the tailbone. Found more often in girls than boys, this tumor occurs in one out of every 35,000 births.

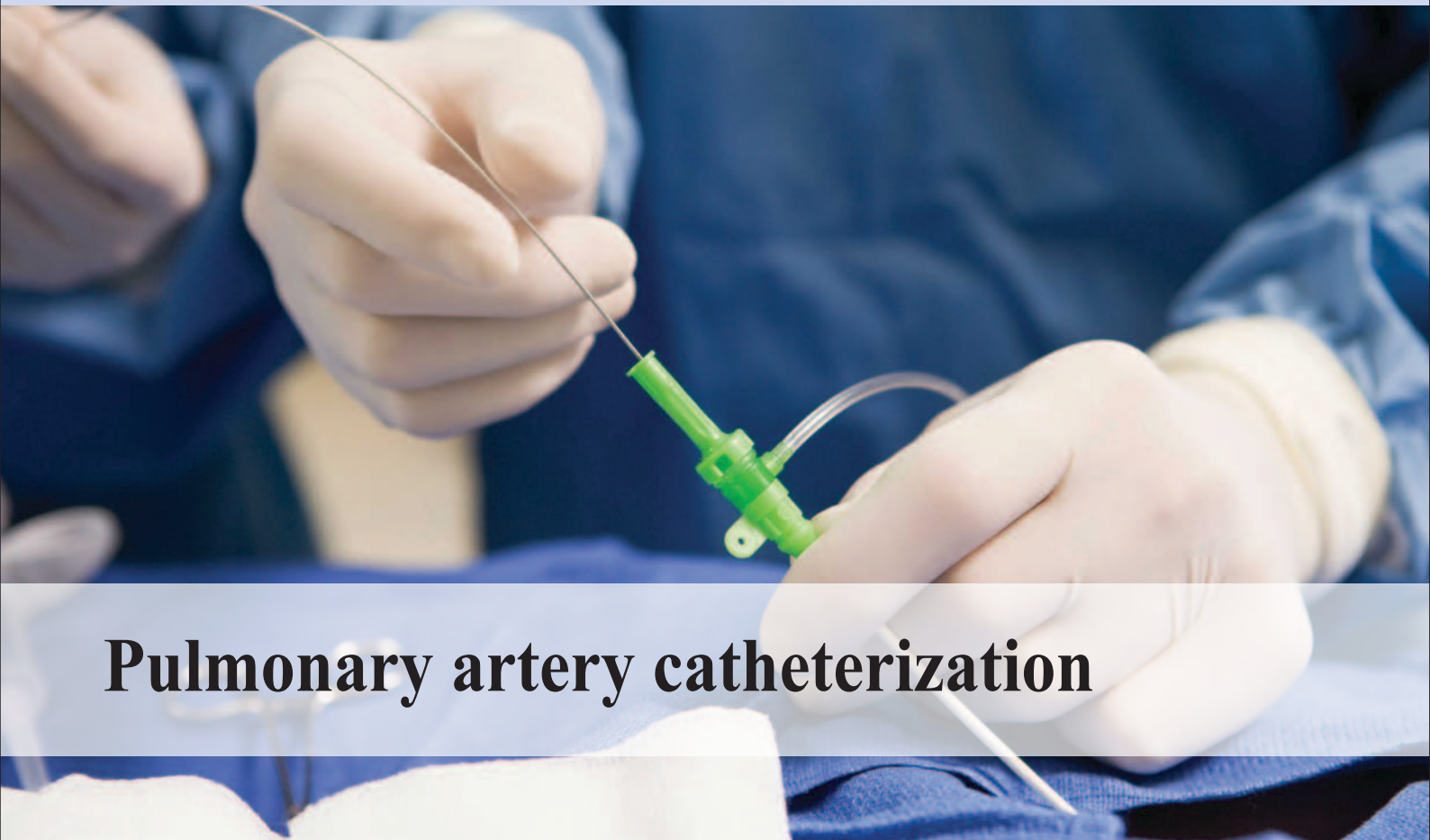
Dr. Darrell Cass, co-director of Texas Children's Fetal Center and associate professor of surgery, pediatrics and obstetrics and gynaecology at Baylor College Medicine explained that the tumor is trying to grow by sucking blood flow from the baby, yet the baby is also trying to grow too. So it becomes a competition and in some instances, the tumor wins and the heart just can't keep up and the heart goes into failure and the baby dies. However, at 23 weeks Margaret Boemer went again to doctor for checkup and after examination doctor explained that the tumor was shutting her heart down and causing her to go into cardiac failure, so it was a choice of allowing the tumor to take over her body or giving her a chance

at life. With a large tumor stealing the blood supply, the fetus was becoming more ill each day.

Finally, the operation was done when she was 23 weeks and 5 days pregnant. Cass and Dr. Oluyinka Olutoye, his partner surgeon, operated for about five hours. During the surgery, Lynlee's heart slowed down to an incredibly low rate. But a heart specialist, a key member of the team, gave the right medication and transfused the right amount of fluid which allowed the surgeons to continue their work. The surgical team removed the bulk of the tumor. When they finished their operation, the surgeons placed Lynlee back inside the womb and sewed her mother's uterus.

Margaret was on bed rest for the remainder of her pregnancy. Despite her pain, she marshaled her strength and made it another 12 weeks to nearly 36 weeks. Lynlee was born for the second time via caesarian section on 6 June 2016. Her weight was 5 pounds and 5 ounces. Immediately, the hospital staff whisked the newborn away to the neonatal intensive care unit for an evaluation, but after this initial checkup, she was deemed healthy and transferred to the nursery.

Reference: www.cnn.health



Pulmonary artery catheterization

Overview

The modern flow directed pulmonary artery catheter (PAC), also known as the Swan Ganz catheter. Pulmonary artery catheterization is a diagnostic procedure in which a small catheter is inserted through a neck, arm, chest, or thigh vein and maneuvered into the right side of the heart, in order to measure pressures at different spots in the heart.

Indication

General indications of pulmonary artery catheter are:

- Management of complicated myocardial infarction
 - ◆ Hypovolemia vs cardiogenic shock
 - ◆ Ventricular septal rupture (VSR) vs acute mitral regurgitation
 - ◆ Severe left ventricular failure
 - ◆ Right ventricular infarction
 - ◆ Unstable angina
 - ◆ Refractory ventricular tachycardia
- Assessment of respiratory distress
 - ◆ Cardiogenic vs non-cardiogenic pulmonary edema
 - ◆ Primary vs secondary pulmonary hypertension
- Assessment of type of shock
- Assessment of therapy
 - ◆ Afterload reduction
 - ◆ Vasopressors
 - ◆ Beta blockers
 - ◆ Intra-aortic balloon counter pulsation
- Assessment of fluid requirement in critically ill patients
 - ◆ Hemorrhage
 - ◆ Sepsis
 - ◆ Acute renal failure
 - ◆ Burns
- Management of postoperative open heart surgical patients
- Assessment of valvular heart disease
- Assessment of cardiac tamponade constriction

Equipment

To create a sterile field chlorhexidine applicators, a fenestrated sterile drape, a surgical cap, a surgical mask with an eye shield, a sterile gown, sterile gloves are necessary.

To insert the introducer sheath, gauze, sterile saline flushes, lidocaine, a 10 cc syringe, a 25 gauge needle, an 18 gauge introducer needle, a guide wire, a scalpel with a number 11 blade, the introducer sheath itself with an internal obturator, sutures, a needle driver are necessary.

To insert the pulmonary artery catheter catheter itself, a plastic sleeve, sterile saline flushes, appropriate tubing with stopcocks, an electronic pressure monitor are needed.

Pulmonary artery catheter

The pulmonary artery catheter (Figure 1) is 110 cm long and 5 to 8 cm in diameter, depending on the features and design. All catheters have a distal port, typically yellow that connects to the catheter tip. Most catheters also have a proximal port that connects to a lumen 30 cm from the tip. Larger catheters usually have an accessory infusion port, typically clear or white, that also terminates approximately 30 cm from the tip.

The balloon at the catheter tip can be inflated by injecting air into the pink or in some cases other color port; use only the syringe that is supplied with the catheter, since it will fill only to the balloon's capacity. To reduce mechanical trauma during insertion, the inflated balloon should completely encircle the catheter tip. Make sure that the balloon is fully inflated whenever the catheter is advanced and fully deflated whenever it is withdrawn.

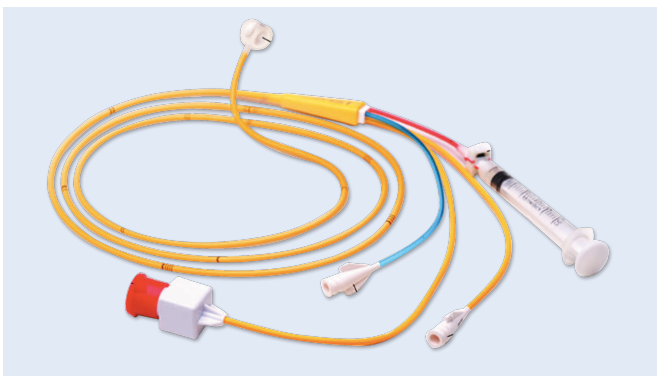


Figure 1: Pulmonary artery catheter

Preparation

After obtaining informed consent from the patient, review a preoperative checklist to confirm the identity and condition of the patient, the procedure to be performed, and the availability of all required equipment. Place the patient in the supine position, and select a central vein for cannulation. The right internal jugular and left subclavian veins are preferred because the curvature of the catheter facilitates passage from these sites to the pulmonary artery. When cannulating an internal jugular or femoral vein, use

ultrasonography to confirm the location and patency of the vein. Cannulation of the subclavian vein generally relies on anatomical landmarks.

Procedure

The pulmonary artery catheter inserted while the patients are in an intensive care unit or a special lab area. The procedure generally follows several steps:

- The patient was given a sedative for relaxation, but not put into sleep
- The area where the pulmonary artery catheter will be inserted should be shaved, cleaned
- An introducer sheath which is a hollow tube, will be placed into the vein first. This allows for the catheter to enter the body more easily
- The catheter is then directed through the veins and into the right side of the heart
- Then measure the blood pressure in the pulmonary artery
- A blood sample may be taken to check blood oxygen levels, or heart medications may be administered to check the heart's response
- When all the tests are complete, the equipment will be removed and the incision wound will be closed with stitches

During the procedure, the heartbeat will be closely monitored using an electrocardiogram machine. The patient will remain awake during the procedure, but should not feel pain. Patient may feel a slight pressure where the catheter is inserted. The amount of time the pulmonary artery catheter stays in the heart depends on the patient. The pulmonary artery catheter may need to stay in place for a few days for very ill patients who require more intense monitoring.

Aftercare

Obtain a portable chest radiograph to evaluate the position of the catheter and to rule out a pneumothorax. To minimize the risk of perforation or infarction, make sure that the catheter tip does not extend more than 4 or 5 cm beyond the midline.

With the catheter in place, the right atrial and pulmonary artery pressures can be monitored continuously from the proximal and distal ports, respectively. The balloon can be periodically reinflated to reassess pulmonary capillary wedge pressure but should always be deflated afterward. If the physician is able to measure the pulmonary capillary wedge pressure when the balloon is only partially inflated, then the catheter has been inserted too far distally in the pulmonary artery. Withdraw the catheter until full balloon inflation is needed to measure the pulmonary capillary wedge pressure.

Abnormal results

Abnormally high right atrium pressure may indicate:

- Pulmonary disease
- Right side heart failure
- Fluid accumulation
- Compression of the heart after hemorrhage
- Right heart valve abnormalities
- Pulmonary hypertension

Abnormally high right ventricle pressure may indicate:

- Pulmonary hypertension
- Pulmonary valve abnormalities
- Right ventricle failure
- Defects in the wall between the right and left ventricle
- Congestive heart failure
- Serious heart inflammation

Abnormally high pulmonary artery pressure may indicate:

- Diversion of blood from a left to right cardiac shunt
- Pulmonary artery hypertension
- Chronic obstructive pulmonary disease or emphysema
- Blood clots in the lungs
- Fluid accumulation in the lungs
- Left ventricle failure

Abnormally high pulmonary artery wedge pressure may indicate:

- Left ventricle failure
- Mitral valve abnormalities
- Cardiac insufficiency
- Compression of the heart after hemorrhage

Complication

Common early complications include ventricular arrhythmias and right bundle branch block, which are generally self-limiting. Complete heart block may occur in patients with preexisting left bundle branch block. In rare cases, the guide wire may embolize and become inaccessible, or the catheter may become knotted in one of the cardiac chambers, preventing withdrawal. In either instance, a vascular surgeon or interventional radiologist must be consulted to ensure safe extraction.

Air embolism may occur if the catheter ports are not properly flushed with saline before the procedure or if the saline filled tubing becomes disrupted. Manifestations include dyspnea, chest pain, tachycardia, hypotension, and in some cases, an acute increase in right heart pressures. In cases of air embolism, place the patient in the Trendelenburg position to limit the outflow of air from the right ventricle, and administer high flow supplemental oxygen to reduce the nitrogen content of the blood and thereby promote the reabsorption of air. In severe cases, hyperbaric oxygen therapy is required.

Pulmonary artery perforation is a rare but dangerous event that occurs in approximately 1 in 3000 patients. Risk factors include older patient age, prolonged balloon inflation, pulmonary hypertension, and systemic anticoagulation. Symptoms include hemoptysis, hypoxemia, and shock. If immediate action is not taken, the risk of death is high. Keep the balloon inflated to limit further bleeding. Intubate the patient with a dual lumen endotracheal tube, and then place the patient in the lateral decubitus position, with the affected side down.

Later complications include pulmonary infarction, catheter related infection, and thrombosis. To reduce the risk of pulmonary infarction, make sure that the catheter tip is positioned such that full inflation of the balloon is required to measure pulmonary capillary wedge pressure and that the balloon is deflated after pulmonary capillary wedge pressure measurements have been completed.

Contraindication

Absolute contraindications include right sided endocarditis, tumors, or masses, since the catheter may dislodge tissue into the pulmonary artery. Relative contraindications include severe coagulopathy and thrombocytopenia, either of which may complicate sheath insertion. Caution should be exercised in patients with left bundle branch block, in whom catheter passage may induce complete heart block, and in patients with right sided valve disease (e.g., tricuspid regurgitation), which makes catheter passage more difficult.

Summary

Pulmonary artery catheterization can be safely performed at the bedside and yields a wealth of hemodynamic data. Although recent studies indicate that this procedure should not be performed routinely in critically ill patients, it remains invaluable in the diagnosis and management of a wide range of cardiovascular illnesses. Because fatal complications can occur, however, the procedure should be performed only when its results are expected to aid clinical management.

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A rare case of primary mucosal melanoma of the palate

Introduction

Primary melanomas located in the oral cavity constitute as low as 2 to 8 percent of all melanomas predominantly affected palate and maxillary gingiva. Less frequently oral melanoma (OM) can be found in mucosal epithelium, striavascularis of inner ears, retina, and uveal tract. Oral melanoma (OM) has been reported in patients aged 20 to 80 years and has a male predilection. The etiology of OM is unknown. Possible risk factors of these tumors may be tobacco use, chronic irritation from ill fitting dentures as well as factors associated with environmental pollution. It was suggested that mucosal melanomas may arise from both pigment producing cells and schwann cells found in the mucous membrane. In case of OM genetic aberrations are less common, than in cutaneous melanoma. The most often occurred aberrations are those, concerning KIT gene (20 percent), NRAS gene (5 percent) and BRAF gene (3 percent). Even 15.6 to 39 percent of OM patients have KIT aberration or more copies of KIT gene. The clinical presentation of this neoplasm can vary widely if it comes to intensity of black saturation, proliferation rate and metastatic potential.

Case Report

A 65 year old man treated from skin psoriasis was referred to the

oncology department by dermatologist with the suspicion of palate melanoma. Physical examination showed painless pigmented lesion present at mucous at the palate durum, palate mole, right buccalmucosa and right upper alveolus. No enlarged regional lymphatic nodes were detected. Excisional biopsy was performed. Pathological examination proved mucosal lentiginous melanoma. Immunohistochemical analysis revealed that the neoplastic cells were positive for HMB-45, melan-A, S-100 and negative for AE1 or AE3, confirming the diagnosis of melanoma.

Computed tomography revealed a thickening of mucosal membrane in the area of the palate durum, especially on the right side. PET CT scan demonstrated active process mainly in the right side of the palate and confirmed absence of any active regional nodes. Chest X-ray examination excluded metastases in the lungs. The patient refused major surgical treatment, so he under went conventional 3D radio therapy to the tumor area but nodes were not irradiated.

The physical examination performed soon after radio therapy cessation, showed weaker saturation with the black color of the tumor, but no decrease in diameter. Two months after radio therapy, the melanoma disappeared from the mucous of the right cheek and alveolus and infiltration was slightly reduced at the periphery of

the palate. The melanoma lesion decreased by one third and stabilized one and a half year after radio therapy. Unfortunately, 1 year and 7 months after radio therapy cessation progression of the disease appeared on right alveolus causing two slightly painful, nonhealing ulcers. Additionally, new intensive black spots appeared on the palate. Two months later the disease further progressed. A thick tumor was found on the palate, and more black spots on the mucous of the cheek and alveolus developed. The patient strongly refused chemotherapy because of a fear of adverse events. The recurrent melanoma was slowly, but constantly progressing, which was clinically observed and documented on CT examination. Nearly 3 years after radio therapy cessation, the patient suffered from pain in the tumor area. Chest X-rays revealed suspicious lesions in the right lung while head and neck CT revealed enlargement of mucosa infiltration of right alveolus and palate. Tumor exceeded midline and caused osteolysis of right alveolus as well as palate durum. This time patient signed informed consent to undergo monochemotherapy with dacarbazine and was referred to the regional chemotherapy center located nearest of his home.

Discussion

Mucosal melanoma of the oral cavity is unusual malignancy. There are no specific clinical symptoms of OM, so it may be difficult to distinguish on a clinical basis from solitary oral melanotic macules, labial lentiginos, foreign bodies, or individual pigmentation. Furthermore it is not easy to differentiate mucosal melanoma from a metastatic melanoma. Additionally the local inflammation may complicate the assessment of infiltrated areas. OM occurs the most commonly in the palate, which is in close anatomic proximity to the most prevalent site for head and neck melanomas, the nasal cavity and maxilla. OM may be noticed by the way of treating different illnesses, because most of them are painless in their early stages. The diagnosis of OM is often unfortunately delayed until some symptoms resulting from ulceration, growth, or bleeding reveal. The pain is usually the late manifestation of melanoma infiltration.

Data regarding OM are scanty. Majority of information about OM comes from case reports, not from randomized clinical trials. That is why the clear guidelines for treatment of melanoma in this location are lacking. Therapy of OM is mainly based on surgical excision of the primary tumor which may be supplemented by adjuvant radio therapy. Adjuvant radio therapy does not appear to affect survival but seems to improve regional control thus is recommended by majority of experts in OM patients. There are limited data proving efficacy of chemotherapy and immunotherapy. Unfortunately the OM is often inoperable, because of a large size of the lesion or localization which is unfavorable for the excision.

The patient did not assent to any surgical treatment, thus was offered up front radio therapy. The physical examination did not indicate nodal spread that is why the irradiated fields were limited to the tumor area. The irradiation of the clinically negative neck is

controversial. However, it is assumed that about 80 percent of OM patients have local disease, and only 5 to 10 percent nodal spread at the time of diagnosis. The poor prognosis of even early staged OM patients results from occult metastases at presentation in the majority of patient. Radiation therapy is rarely used as a primary modality in OM patients, in patients with inoperable tumour, in medically compromised patients and in the older population. Although cutaneous melanomas present weak radio sensitivity, patients may occasionally have good response to radio therapy, especially in the case of early melanomas or in melanomas in situ. In some cases the definitive radio therapy may result in survival rates comparable to that received by surgery. However, the efficacy of definitive radio therapy in III and IV stage of the disease is poor reviewed in. The possible late complications of the radio therapy as mucosal ulcer, radiation necrosis or bone exposure are another limiting factors of definitive radio therapy. There are single reports that definitive particle radiation therapy promises to provide high rates of local control for OM inoperable patients. Unfortunately, overall survival rate does not extend significantly after particle radiotherapy treatment.

Separate small studies demonstrated that adjuvant chemotherapy and immunotherapy may prevent distant metastases formation in the subset of OM patients improving also survival rates. Recent molecular evidence suggests that proto-oncogene KIT aberrations determined in advanced head and neck melanoma patients may represent a potential diagnostic value and serve as a therapeutic target for tyrosine kinase inhibitors also in an adjuvant setting of OM patients.

Recurrences of the disease may occur even 10 to 15 years after primary therapy of OM patients. Distant metastases to the brain, liver, lungs, and bones are frequently observed as well. Unfortunately, most patients die because of the progressive disease in 2 years. Systemic therapy is the management of choice in case of recurrent or metastatic OM. Dacarbazine treatment of cutaneous melanoma patients increased overall survival by 5 or 6 to 7 or 8 months, however in OM patients dacarbazine alone was not effective. Combination of dacarbazine with interleukin-2 (IL-2) is unsatisfactory as well. Increase of survival of melanoma patients occurred with the introduction of targeted therapies. Administering of ipilimumab for advanced melanoma patients increased overall survival from 6.4 months to 10.1 months. This human IgG1 monoclonal antibody (MoAb), by inhibiting the activation of CTLA-4, enhances T-cell proliferation and T-lymphocytes dependent antitumor response. Based on results of clinical trials, in the year 2011, the FDA approved ipilimumab for treatment of patients with inoperable or metastatic melanoma. Finally it indicates that to improve treatment efficacy of OM patients both early detection as well as a life long follow up are of paramount importance in the management of this aggressive disease.

Reference: Clin. Med. Rev. Case. Rep., 2016, Vol. 3 (8)



Dry eye

Dry eye is a common eye disease. As many as 6 percent of the population over the age of 40 and more than 15 percent of the population over the age of 65 suffer from dry eye. Dry eye is a disorder of the tear film due to tear deficiency or excessive tear evaporation which causes damage to the intrae palpebral ocular surface and is associated with symptoms of discomfort. Clinically, symptoms associated with dry eyes can include ocular burning, foreign body sensation, stinging sensation, pain, photophobia or blurred vision.

Tear film

The precorneal tear film is an essential structure of the ocular surface. This tear film can be divided into three layers:

- The anterior lipid layer which is secreted by the meibomian glands
- The middle aqueous layer which is secreted by the lacrimal gland
- The innermost mucin layer which is secreted by the goblet cells of the conjunctival epithelium respectively

Its use is to lubricate the eye, maintain nutrients and oxygenation of the ocular structures, act as a part of the refractive surface and help to remove debris from the ocular surface.

Type

In terms of tear production, dry eyes can be divided into two types:

- The tear deficiency dry eye
- The tear evaporative dry eye

Tear deficiency dry eyes can be further divided into:

- Non sjogren syndrome
- Sjogren syndrome

Tear deficiency dry eyes is an autoimmune disease associated with lacrimal gland and salivary gland lymphocytic infiltration.

Tear evaporative dry eyes can be divided into:

- The meibomian gland disease (MGD)
- Exposure related dry eyes
- Mucin deficiencies such as the steven johnson syndrome

Cause

The causes of dry eye syndrome is associated with its type (Tear deficiency dry eye and tear evaporation dry eye). However, the causes of dry eye are given below.

Tear deficiency type

Dry eyes can occur when anyone is unable to produce enough tears. The medical term for this condition is keratoconjunctivitis sicca. Common causes of tear deficiency type of dry eye include:

- Aging
- Certain medical conditions including diabetes mellitus, rheumatoid arthritis, scleroderma, thyroid disorders and vitamin A deficiency
- Certain medications, including antihistamines, decongestants, hormone replacement therapy, antidepressants and drugs for high blood pressure, acne, birth control and parkinson's disease
- Laser eye surgery, though symptoms of dry eyes related to this procedure are usually temporary
- Tear gland damage from inflammation or radiation

Tear evaporative type

Dry eye can also occur due to increase tear evaporation here common causes of tear evaporative type include:

- Wind, smoke or dry air
- Blinking less often, which tends to occur when anyone is concentrating, for example, while reading, driving or working at a computer
- Eyelid problems, such as ectropion and entropion

Pathogenesis

Protein analysis comparing dry eyes and normal eyes found decreases in lactoferrin and epidermal growth factor in the dry eye syndrome using enzyme linked immunosorbant assay (ELISA). A protein found in acinar cells of the lacrimal gland, AQP-5 was shown to have increased in the sjogren type of dry eye syndrome, indicating the possible leakage of such proteins into the tear via lymphocytic infiltration of the lacrimal gland. An increase in inflammatory cytokines of interleukin 1 (IL-1) alpha and IL-1 beta in both MGD and the sjogren type of dry eye syndrome, indicating increased protease activity on the ocular surface, mainly on the conjunctival epithelium. Apart from IL-1, IL-6 in the tear was also increased in the sjogren syndrome, indicating an inflammatory process of the sjogren dry eye disease. Another study to look at sialic acid, a component of mucin in tear has found a lower level in dry eye patients compared to controls, indicating a change in quantity and quality of glycoproteins in the tear in dry eye diseases. The change in tear protein profile in the dry eye syndrome, especially the sjogren disease, has shed some light on the mechanism of the dry eye syndrome.

Clinical feature

Following clinical features are seen in the dry eye:

- Itching
- Pain in the eye
- Redness of the eye
- Foreign body sensation in the eye
- Blurring of vision
- Insensitive to light (Photophobia)
- Intolerance to winds

Diagnosis

Dry eye can be diagnosed by clinical features of dry eyes, schirmer tests and fluorescein stain and rose bengal staining. The tear film stability can be assessed with the fluorescein Tear Break Up Time test (TBUT), measuring the interval in seconds between a complete blink and the first appearing dry spot or discontinuity in the precorneal film. Patients with TBUT less than 3 seconds are classified as clinical dry eyes. Another clinical method for assessing the severity of dry eye is the ocular surface dye staining. Fluorescein and rose bengal stain can both be used as diagnostic dyes for evaluating the staining. Fluorescein staining occurs when the epithelial barrier is disrupted, due to the loss of epithelial cells and serves as a good test for evaluation of dry eyes. Rose bengal stains the devitalised epithelial cells of the conjunctiva and serves a similar purpose. Another important clinical test is the schirmer test. It is useful for measuring aqueous tear production.

Management

Management of dry eye diseases depends on the causes and severity of the dry eye syndrome. Essentially, artificial tear used to replenish the deficient aqueous layer of the tear film, and to dilute the cytokines necessary to substantiate the disease. Artificial tear comes in different viscosities and can be divided into preserved or non preserved forms. If the tear deficiency is severe, then more viscous forms such as eye gel or even ointment can be used to maintain a better and longer ocular protection. Since dry eye diseases, such as the sjogren syndrome is associated with inflammation, the use of topical steroids or non steroidal anti-inflammatory medications are sometimes useful. Topical antibiotics may be necessary if the dry eye syndrome is associated with corneal complications. Meibomian gland diseases may warrant vigorous lid hygiene and warm compresses of the lid, together with topical or even systemic antibiotics such as doxycycline. For more severe disease, topical immuno modulating drugs such as cyclosporine-A drops may be necessary. Its additional growth factors compared to artificial tear are cited as important components necessary for epithelial healing. Accupuncture has been recently cited as a treatment option in the dry eye syndrome.

References:

1. Hong Kong Medical Diary, October 2010, Vol. 15
2. www.mayoclinic.org

Digital gangrene

A 71 year old man presented with palpable purpura and received a diagnosis of type II cryoglobulinemia. He had an elevated cryocrit (13 percent), evidence of a monoclonal IgM kappa immunoglobulin (0.8 g per deciliter), and a positive result for rheumatoid factor. A specimen from a bone marrow biopsy showed less than 1 percent plasma cells, and serologic testing for hepatitis C was negative. Sixteen months after diagnosis, he was admitted for progressive renal disease. A repeat bone marrow biopsy revealed a hypercellular marrow with 15 percent monotypic IgM kappa restricted plasma cells, confirming a diagnosis of Waldenström's macroglobulinemia. He was treated with rituximab and therapeutic plasma exchange but was lost to follow up after hospital discharge. Four months later, he presented with altered mental status and progressive ischemic injury of the toes, the fingers, the superior aspect of the ears, and the tip of the nose, probably related to hyperviscosity and



cryoglobulinemic vasculitis. He required amputation of the digits and since presentation about 1 year ago has been treated with intravenous immunoglobulin, rituximab, and therapeutic plasma exchange.

References: N. Eng. J. Med., April 21, 2011; 364:16

Pseudoverrucous papules

A 53 year old woman with a history of delusions presented with more than 100 moist, red papules measuring 3 to 6 mm in diameter on the dorsal surfaces of the right hand and wrist (Figure A). For almost a year, she had been having a delusion that someone was injecting fungus into her hand. To protect herself, she had worn a medical examination glove on her right hand at all times over the past 10 months. Analysis of a biopsy specimen produced results consistent with a diagnosis of pseudoverrucous papules. This condition is a form of irritant contact dermatitis that has morphologic and histologic overlap with granuloma gluteale infantum, an occlusive diaper dermatitis. The examination glove fit less tightly on the patient's fingers than on her hand and wrist, which may explain the distribution of the papules. Treatment consisted of removing the glove. At a follow up visit 6 weeks later the papules were



significantly smaller and fewer in number (Figure B). On examination at a follow up visit at 3 months, the papules were almost completely resolved, with only a plaque of erythema remaining.

Reference: N. Eng. J. Med. June 9, 2011; 364:23

He who has a health, has hope and he who has hope, has everything

1

World Leprosy Day
30 January 2017

2

World Cancer Day
04 February 2017

3

Toothache Day
09 February 2017

4

Rare Disease Day
28 February 2017

5

Multiple Personality Day
05 March 2017

6

World Kidney Day
09 March 2017

7

World Down Syndrome Day
21 March 2017

8

World Tuberculosis Day
24 March 2017

HEALTH MYTH

Please select the correct answer by (✓) against a, b, c, d, e of each question in the Business Reply Post Card and sent it through our colleagues or mail within 25 January 2017; this will ensure eligibility for the Raffle Draw and the lucky winners will get attractive prizes!

1. The medical history of a 45 year old male reveals episodes of vertigo and loss of consciousness associated with sweating. What are the possible causes of his symptoms?

- a) Hyperglycemia
- b) Hyperventilation
- c) Zollinger Ellison syndrome
- d) Pheochromocytoma
- e) Paroxysmal tachycardia

2. Which of the following should be avoided in patients receiving monoamino oxidase inhibitor therapy?

- a) Cheese
- b) Imipramine
- c) Phentolamine
- d) Pethidine
- e) Sulphonamides

3. In which of the following conditions can central cyanosis be detected?

- a) Heatstroke
- b) Heavy physical exercise
- c) Pulmonary arteriovenous fistula
- d) Ventilation perfusion mismatch
- e) Methemoglobinemia

4. Macroglossia is a possible feature of which of the following conditions?

- a) Acromegaly
- b) Marfan's syndrome
- c) Hurler's syndrome
- d) Achondroplasia
- e) Amyloidosis

5. Which of the following conditions is associated with true hematuria?

- a) Acute pyelonephritis
- b) Urinary tract tuberculosis
- c) Acute cystitis
- d) Malignant hypertension
- e) Renal infarction

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Health Myth Answer October-December 2016

Sl. No.	Answer
1	b
2	a
3	d
4	a
5	d

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Very Good Good Satisfactory

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Health Myth

Tick (✓) the corrections

Q.1	a	b	c	d	e
Q.2	a	b	c	d	e
Q.3	a	b	c	d	e
Q.4	a	b	c	d	e
Q.5	a	b	c	d	e