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The essence of medical practice

Gastro Esophageal Reflux Disease

CONTENTS

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EDITORIAL

Dear Doctor,

We welcome you to this issue of "Info Medicus".

Success is a journey, result of hard work and perfection that reflects in our 15 years journey of Info Medicus through your contributions, comments and sharing ideas. This issue is enriched with different types of interesting topics those you are encountered in your daily practices. Firstly, we have focused on Amazing human facts and we hope you will enjoy this. We have emphasized on Diabetic foot which affects nearly 6% of people with diabetes which can impair patient's quality of life and affect social participation and livelihood.

We also have a detailed feature on Arterial puncture for blood gas analysis which is a common procedure performed in adults to measure the oxygen tension (PaO_2), carbon dioxide tension ($PaCO_2$), acidity (pH), oxyhemoglobin saturation (SaO_2) and bicarbonate (HCO_3) concentration in arterial blood.

Besides, in Review article we have included a topic on Management of gastroesophageal reflux disease (GERD); we hope you will find interesting information from it.

Other regular features are there as usual.

On behalf of ACI we wish you healthy, prosperous and peaceful lives.

Thanks and best regards

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Four facts about human ear

1. Ears never stop hearing, even when a person sleeps. The ears will continue to pick up sound but brain just ignores incoming sounds

2. Wearing headphones for just an hour will increase the bacteria in the ear by 700 times

3. Humans are capable of hearing sounds as low as 20 Hertz and as high as 20,000 Hertz

4. Ears helps in taste, ear do have a function in transmitting taste signals to the brain through chorda tympani nerve

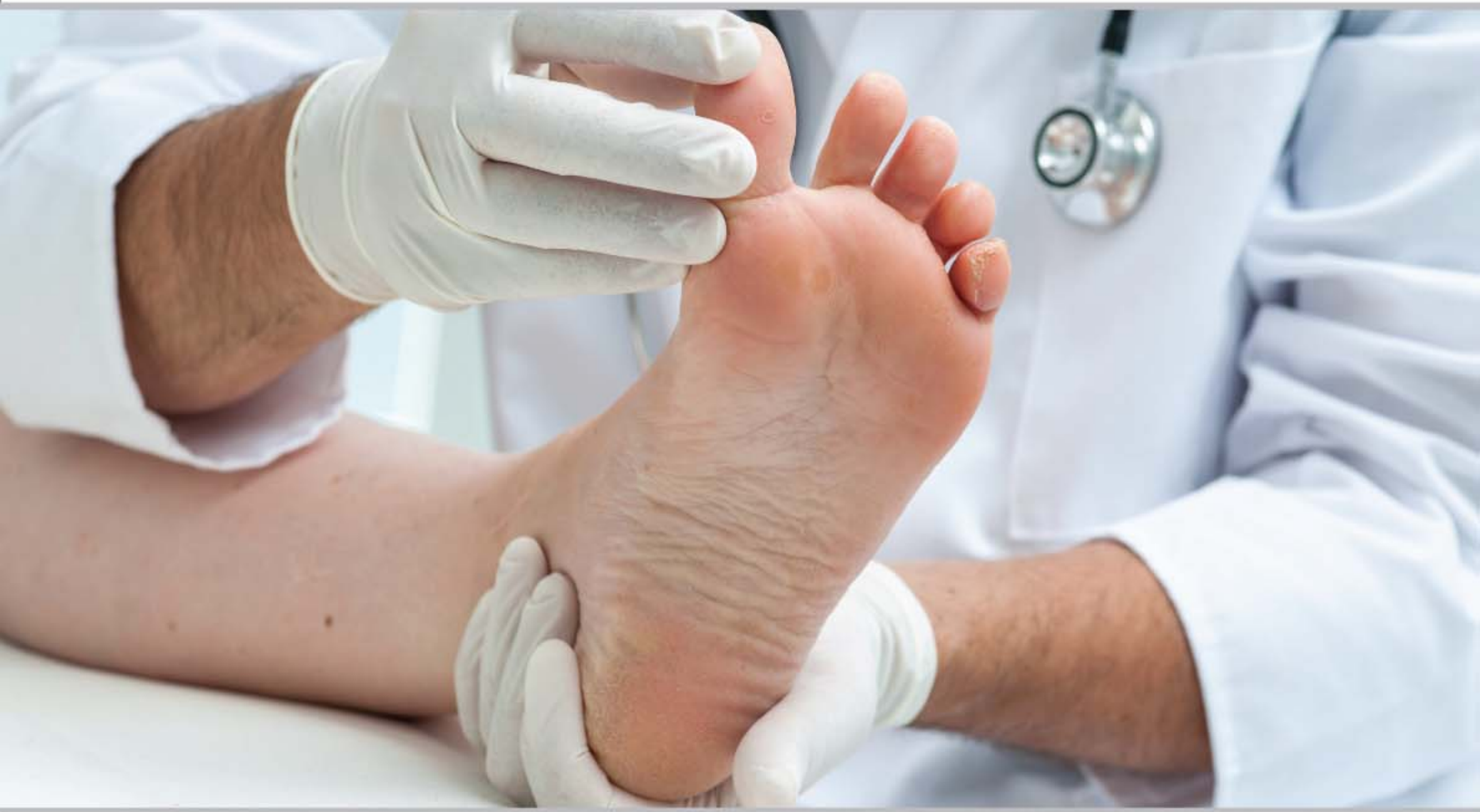
Four facts about human skin

1. Every minute, our skin sheds over 30,000 dead cells and an average human sheds 9 pounds of dead skin cells in one year

2. The thinnest skin is found on our eyelids (0.02 mm thick) and the thickest skin is found on the feet (1.4 mm thick)

3. Our skin is blessed with the ability to renew itself. The entire skin is renewed in 28 days

4. An average adult human has about 21 square feet of skin and every square inch of skin holds up to 300 sweat glands



Diabetic foot

Diabetic foot disease affects nearly 6% of people with diabetes and includes infection, ulceration or destruction of tissues of the foot. It can impair patient's quality of life and affect social participation and livelihood. Between 0.03% to 1.5% of patients with diabetic foot require an amputation. Most amputations start with ulcers and can be prevented with good foot care and screening to assess the risk for foot complications. Here an update on the prevention of diabetic foot in primary care is provided.

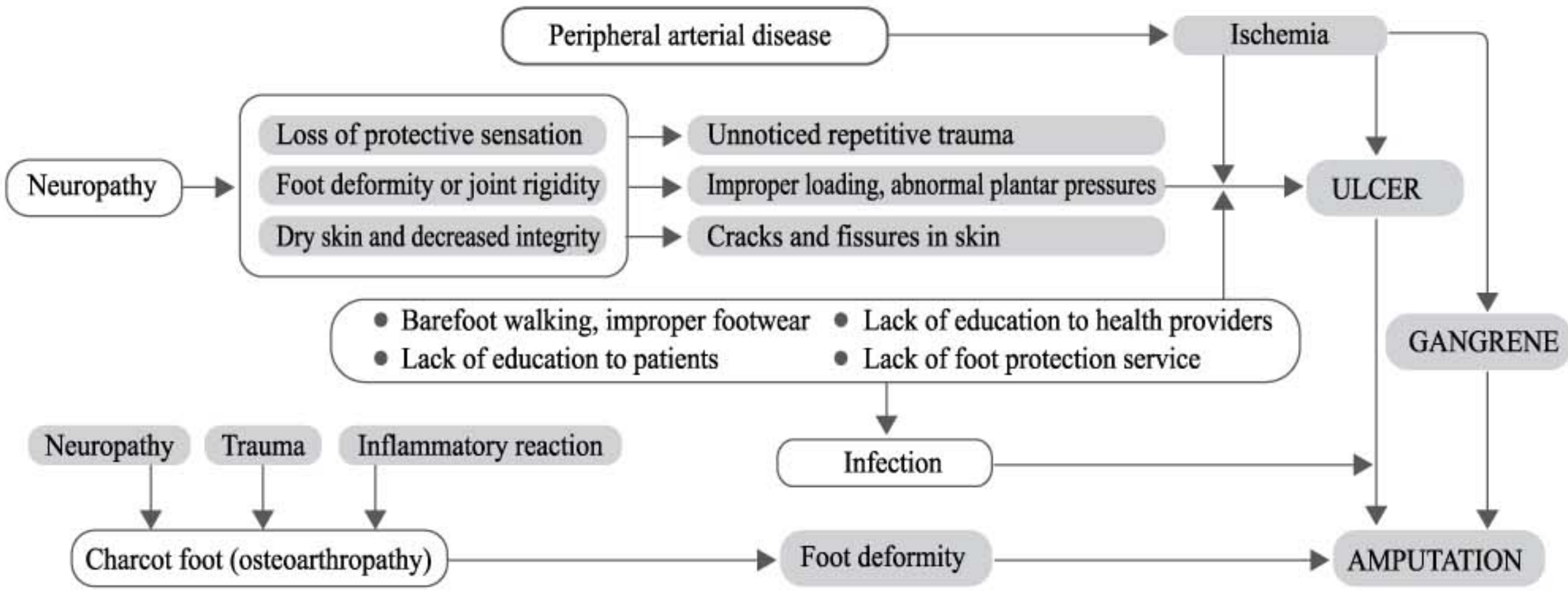
Causes

Uncontrolled diabetes contributes to the development of neuropathy and peripheral arterial disease by complex metabolic pathways. Loss of sensation caused by peripheral neuropathy, ischemia due to peripheral arterial disease or a combination of these may lead to foot ulcers. Table-1 depicts factors that contribute to foot complications. A combination of neuropathy, abnormal loading of food, repeated micro trauma and metabolic abnormalities of bone leads to inflammation causing osteolysis, fractures, dislocation and deformities. In low and middle income countries barefoot walking, lack of awareness, delay in seeking care and shortage of trained healthcare providers and foot care services are common factors that add to the burden of foot disease.

Diagnosis

A thorough foot examination is important to detect the disease early. Screening for peripheral neuropathy and peripheral arterial disease can help identify patients at risk of foot ulcers. A history of ulcers or amputations and poor glycemic control increase the risk. Assess the patient's general condition for signs of toxicity or sepsis such as feeling unwell, looking sick, showing abnormal behaviour, circulation or respiration, with or without fever. Examine the feet at each follow up visit for active disease such as ulceration or gangrene. Look for lesions such as fungal infection, cracks and skin fissures, deformed nails, macerated web spaces, calluses and deformities such as hammer toes, claw toes and pes cavus (claw foot) which increase the risk of ulceration. Feel the temperature of the feet with the dorsum of the hand. A cold foot might suggest ischemia and increased warmth with redness and swelling might suggest inflammation such as acute charcot foot or cellulitis.

Table-1 Risk factors and mechanism for foot ulcer and amputation



Peripheral neuropathy: The aim of screening is to identify patients with loss of protective sensation in the feet. Most guidelines recommend the 10 g monofilament for neuropathy assessment in people with diabetes. This monofilament exerts a 10 g buckling force when it bends. An inability to sense a 10 g pressure is the current consensus definition of loss of protective sensation. The test is portable, cheap and easy to perform.

Peripheral arterial disease: Ask for a history of intermittent claudication and rest pain which suggest peripheral arterial disease. Palpate the posterior tibial artery and dorsalis pedis artery in both feet and record pulsations as absent or present. The ankle brachial index is an adjunct measure to diagnose peripheral arterial disease. It is the ratio of the highest systolic blood pressure at the ankle to the systolic blood pressure at the arm and is measured using a doppler device. Measurement of the ankle brachial index is user dependent. People with diabetes can often have falsely raised ankle brachial index levels as a result of poor compressibility from calcified arteries.

Prevention

Regular foot examination: The suggested frequency for follow up is based on expert consensus. For people at low risk, continue annual foot assessments as they could progress to moderate or high risk. Emphasize the importance of foot care and monitoring glycemic control. More frequent follow up is advised in patients at moderate or high risk, such as those with a foot deformity or with a diagnosis of peripheral neuropathy or peripheral arterial disease at initial assessment. Repeat testing for neuropathy is not necessary if diagnosed previously. A quick inspection for a breach in skin integrity or ulceration should suffice (Table-2).

Table-2 Foot care tips

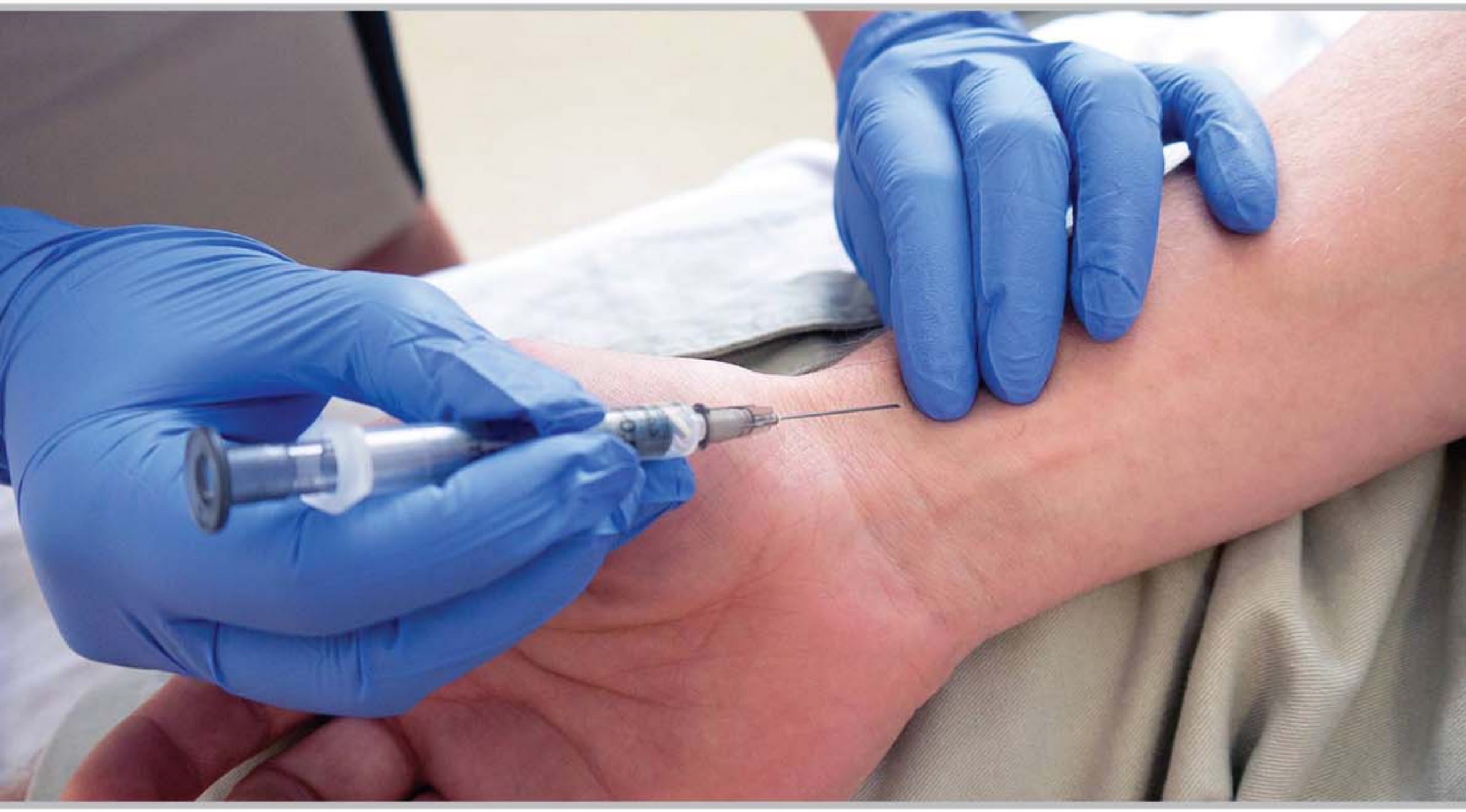
- Inspect both feet daily including the area between the toes
- Wash the feet daily with water at room temperature with careful drying, especially between the toes
- Use body oils or creams for dry skin, but not between the toes
- Nails should be cut straight across
- Do not remove corns and calluses using a chemical agent
- Always wear socks with shoes and check inside shoes for foreign objects before wearing them
- Avoid walking barefoot at all times

Glycemic control: Early and good glycemic control is effective in preventing neuropathy but there is a lack of studies to show that glycemic control reverses neuropathy. Discuss optimal blood sugar and glycated hemoglobin (HbA1c) targets with patients and monitor these as per standard guidelines for diabetes care to prevent or slow the progression of peripheral neuropathy.

Patient education: Offer people with diabetes or their care-givers, or both, oral and written information on:

- The importance of blood glucose control and modifiable cardiovascular risk factors such as diet, exercise, body weight and cessation of smoking
- The importance of foot care and advice on basic foot care. While offering advice consider the patient's cultural practices and religious beliefs as well as social and family support
- The person's current risk of developing a foot problem

Reference: BMJ, November 2017; 359 (Supp- 1):1-7



Arterial puncture for blood gas analysis

Introduction

Radial arterial puncture for arterial blood gas (ABG) analysis is a common procedure performed in adults. It is a test that measures the oxygen tension (PaO_2), carbon dioxide tension ($PaCO_2$), acidity (pH), oxyhemoglobin saturation (SaO_2) and bicarbonate (HCO_3) concentration in arterial blood. Some blood gas analyzers also measure the methemoglobin, carboxy-hemoglobin and hemoglobin levels. Such information is vital when caring for patients with critical illness, respiratory or metabolic diseases. Therefore, the ABG test is one of the most common tests performed on patients in intensive care units.

Indications

Puncture of the radial artery is the preferred method of obtaining an arterial blood sample for blood gas analysis. The chief indication for blood gas analysis is the need to obtain values for the partial pressures of oxygen and carbon dioxide and for arterial pH. This information is needed in assessing a patient with acute severe respiratory distress. Measurements of arterial pH and the partial pressures of carbon dioxide and oxygen provide accurate information on the status of acid base balance and gas exchange. Another indication for arterial blood gas sampling is the need to perform co-oximetry in order to assess for methemoglobinemia and carboxyhemoglobinemia.

Contraindications

ABG is contraindicated in the presence of a known deficiency of collateral circulation to the distal upper extremity. A modified Allen test can be performed to assess the adequacy of the collateral circulation of the radial artery by the ulnar artery (Figure-1). It should not be performed in patients with an overlying skin infection, presence of arteriovenous fistulas or vascular grafts in which case arterial vascular puncture known or suspected severe peripheral vascular disease of the limb involved. In patients who are taking anticoagulants or in those with coagulopathies, it should be performed only if absolutely necessary, because of the increased risk of bleeding and hematoma formation.

Equipment

The materials needed for ABG sampling include the following:

- Gloves
- Syringe for sampling
- Lithium heparin
- ABG syringe
- Antiseptic skin solution
- Syringe cap
- Sterile gauze
- Adhesive bandage
- Bag with ice
- Sharp object container
- Lidocaine HCl
- 25-gauge needle with syringe for local anesthetic

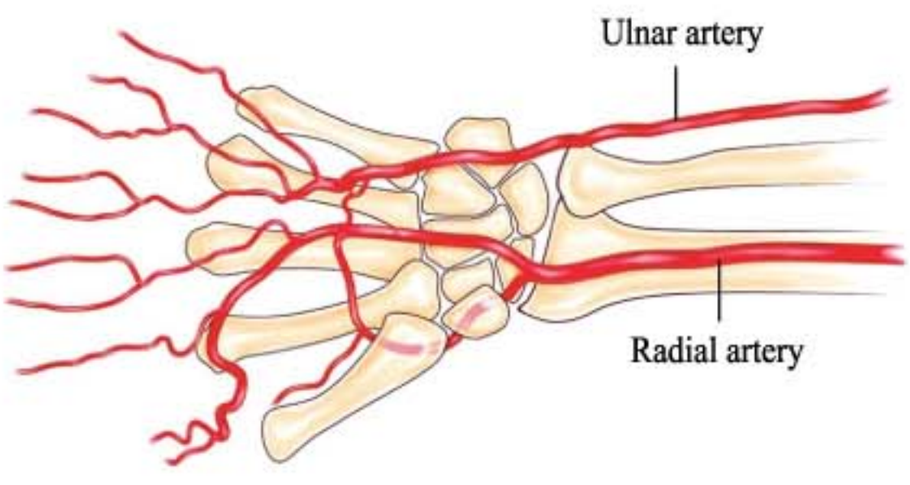


Figure-1 Location of radial and ulnar artery

Procedure

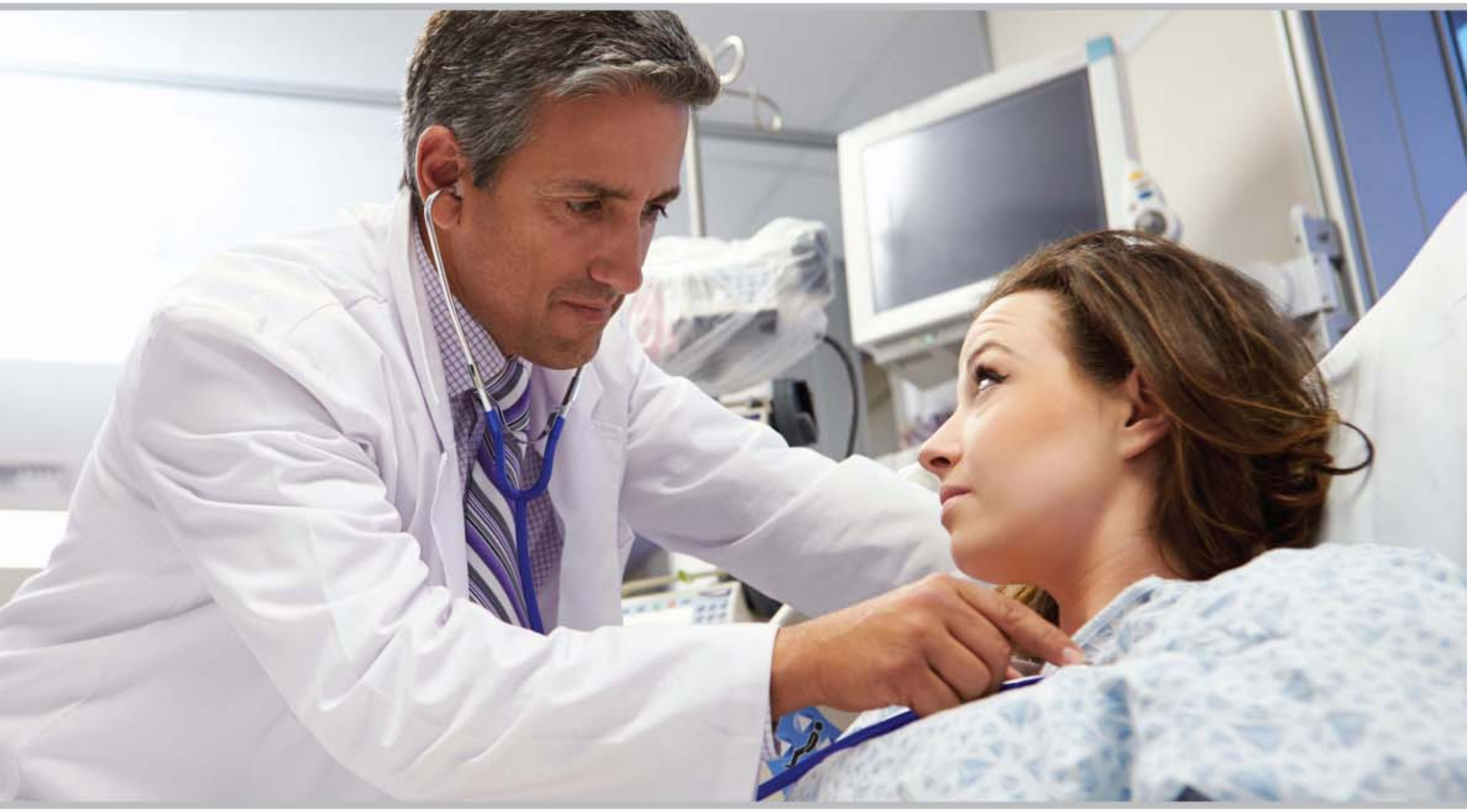
For sampling from the radial artery using a needle and syringe, follow the steps outlined below:

- Place the patient on their back, lying flat. Ask the nurse for assistance if the patient's position needs to be altered to make them more comfortable
- Locate the radial artery by performing an Allen test for collateral circulation. If the initial test fails to locate the radial artery, repeat the test on the other hand. Once a site is identified, note anatomic landmarks to be able to find the site again
- Perform hand hygiene, clear off a bedside work area and prepare supplies. Put on an impervious gown or apron and face protection, if exposure to blood is anticipated
- Disinfect the sampling site on the patient with 70% alcohol and allow it to dry
- If the needle and syringe are not pre-assembled, assemble the needle and heparinized syringe and pull the syringe plunger to the required fill level recommended by the local laboratory
- Holding the syringe and needle like a dart, use the index finger to locate the pulse again, inform the patient that the skin is about to be pierced then insert the needle at a 45 degree angle, approximately 1 cm distal to the index finger to avoid contaminating the area where the needle enters the skin
- Advance the needle into the radial artery until a blood flashback appears, then allow the syringe to fill to the appropriate level. Do not pull back the syringe plunger
- Withdraw the needle and syringe; place a clean, dry piece of gauze or cotton wool over the site and have the patient or an assistant apply firm pressure for sufficient time to stop the bleeding. Check whether bleeding has stopped after 2 to 3 minutes. Five minutes or more may be needed for patients who have high blood pressure or a bleeding disorder or are taking anticoagulants
- Activate the mechanisms of a safety needle to cover the needle before placing it in the ice cup. In the absence of a safety engineered device, use a one hand scoop technique to recap the needle after removal
- Expel air bubbles, cap the syringe and roll the specimen between the hands to gently mix it. Cap the syringe to prevent contact between the arterial blood sample and the air and to prevent leaking during transport to the laboratory
- Label the sample syringe
- Dispose appropriately of all used material and personal protective equipment
- Remove gloves and wash hands thoroughly with soap and water, then dry using single use towels; alternatively, use alcohol rub solution
- Check the patient site for bleeding and if necessary apply additonal pressure

Summary

Arterial blood gas analysis provides useful information regarding respiratory and metabolic pathology. The partial pressure of carbon dioxide, bicarbonate concentrations and pH values indicates the presence or absence of primary or mixed respiratory and metabolic acidosis or alkalosis. The partial pressure of oxygen will reveal abnormalities in the oxygen content of blood and the presence or absence of hypoxemia. With the appropriate technique, radial arterial puncture for arterial blood gas analysis is a skill easily mastered by medical trainees.

References: 1. N. Eng. J. Med., 3 February 2011, Vol. 364, No. 5:e7
2. www.uptodate.com
3. emedicine.medscape.com
4. www.ncbi.nlm



Gestational trophoblastic neoplasia: challenges dealt in the diagnosis

Introduction

Exaggerated placental site (EPS) is defined as a non-neoplastic trophoblastic lesion where intermediate trophoblasts infiltrate exaggeratedly into endometrium and myometrium. It consists of cells showing the same immuno-phenotypical features as the intermediate trophoblasts in the normal placental implantation site and is observed as an exaggerated form of the normal physiological process.

Case report

A 45 year old female presented to out patient department with continuous bleeding per vagina for past 3 weeks. The patient had five previous normal vaginal home deliveries and her last childbirth was 12 years back. Her prior menstrual cycles had been irregular for 3 to 4 months preceding which they were completely normal. Patient had no significant past or family history. On examination, she had significant pallor with stable vital parameters. Her hemoglobin was 6 gm/dl. Her abdominal examination revealed a 28 to 30 weeks smooth firm mass with restricted mobility which seemed to be arising from the pelvis. Her pelvic examination confirmed the mass to be mobile with the uterus and was of firm in consistency. The patient had active trickling of blood per vagina. The ultrasound findings revealed a large solid cystic lesion arising from pelvis of approximately 20×14 cm, which was not separately visualized from the uterus. On the basis of clinical and radiological findings, differential diagnosis of fibroid uterus was made and considering her age, the possibility of leiomyosarcoma could not be ruled out.

The patient had a normal chest x-ray & ECG. The patient was advised admission. During the hospital stay, patient was transfused with four units of packed red blood cells to raise hemoglobin. After an informed consent, laparotomy was planned and total abdominal hysterectomy with bilateral salpingo oophorectomy was done within a week. Specimen

revealed a bulky uterus of approximately 18 to 20 cm. Both the fallopian tubes and ovaries were normal.

On cut section, the large amount of clotted blood was evident within the uterus. Figure-1 shows the gross morphology of the uterus, 20 × 15 cm in size with inset showing cut section, revealing clotted blood. Upon removal of blood clots, an approximately 15 × 15 cm mass was felt on the posterior aspect of uterine wall. Along with the uterus, cervical tissue and ovaries, omental tissue, smears from liver, fluids from paracolic gutter and pouch of doughlas were sent for histopathology and cytology.

The postoperative period was uneventful. Histopathology report disclosed that it was gestational trophoblastic disease with exaggerated placental site reaction. A photomicrograph showing proliferating trophoblastic tissue and chorionic villi, wherein trophoblastic tissue show focus of invasion into the myometrium. Postoperatively, β-hCG was found to be 1094 mIU/ml which was followed up serially. During the follow up period, the patient was evaluated regularly with hemogram, ultrasound, chest x-ray and β-hCG which subsided over a period of 5 months after seven chemotherapy cycles with intravenous injection methotrexate 50 mg. The last value done in February 2015 was 2.76 mIU/ml following which the patient is being followed up every 6 months.

Discussion

Gestational trophoblastic disease (GTD) is the term used to encompass a group of tumors typified by abnormal trophoblast proliferation. GTD histologically is divided into hydatidiform moles, which are characterized by the presence of villi and non-molar trophoblastic neoplasms, which lack of villi. The malignant forms of gestational trophoblastic disease are termed gestational trophoblastic neoplasia (GTN). These include invasive mole, choriocarcinoma, placental site trophoblastic tumor and epithelioid trophoblastic tumor.

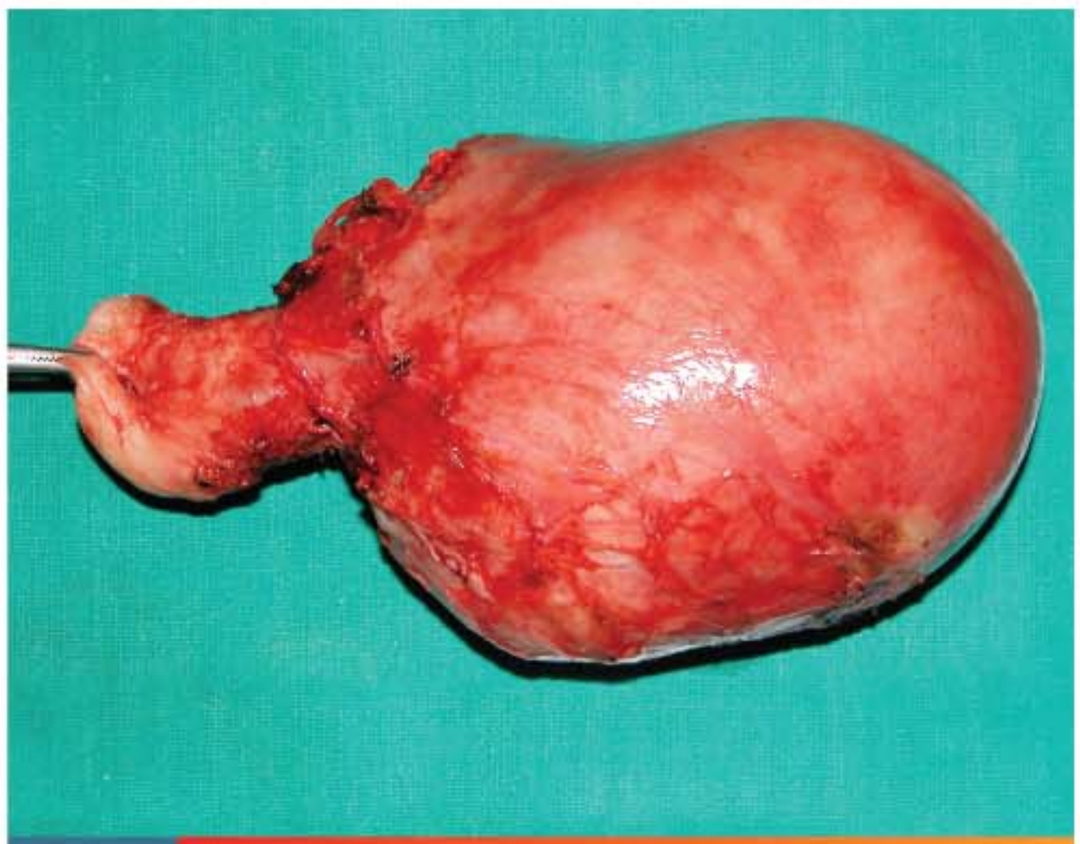


Figure-1 Gross morphology of the uterus, 20 × 15 cm in size

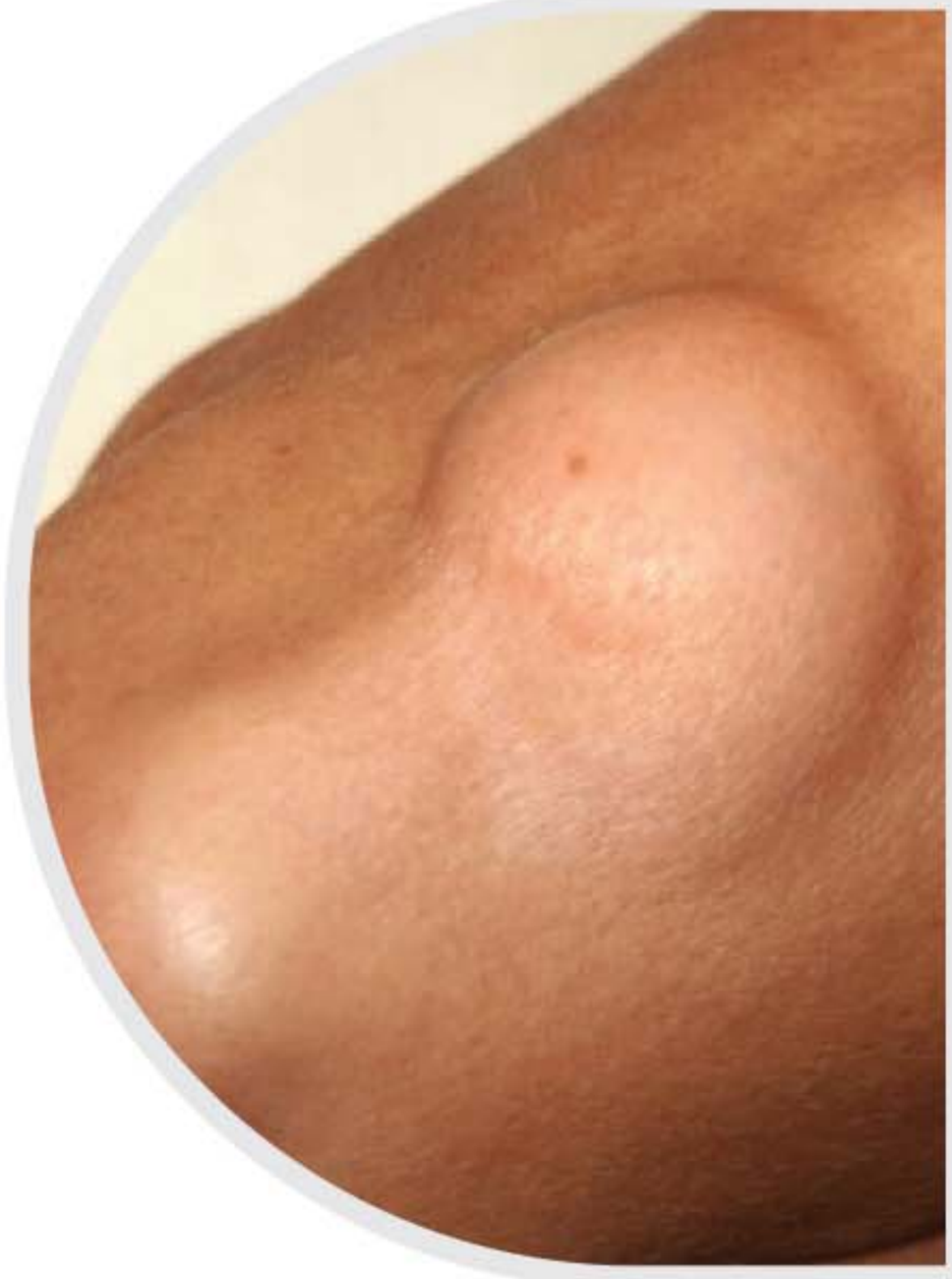
In this case, a retrospective diagnosis of gestational trophoblastic neoplasia was made. The patient had irregular menses at perimenopausal age group with pelvic mass which was confirmed by an ultrasound; thus, fibroid uterus and leiomyosarcoma were kept high in differential diagnosis. An intermediate trophoblast is a distinctive trophoblastic cell population from which four trophoblastic lesions are thought to arise: exaggerated placental site (EPS), placental site nodule (PSN), placental site trophoblastic tumor (PSTT) and epithelioid trophoblastic tumor (ETT). EPSs and PSNs are non-neoplastic lesions, whereas PSTTs and ETTs are neoplasms with a potential for local invasion and metastasis.

The pathological significance of EPS has not been clearly determined. And it is a difficult condition for clinicians to diagnose and has not received much attention until now. EPS has been detected in molar pregnancy, cervical pregnancy, abortion or induced abortion of early pregnancy, intrauterine fetal death of 24 weeks gestation and term pregnancy. It can develop from early to term pregnancy. In the case with the longest interval from the antecedent pregnancy, a lesion or clinical symptom appeared 15 years after delivery and in the case with the shortest interval, EPS appeared during pregnancy.

Conclusion

This case report attempts to illustrate a case of exaggerated placental site which is very few in number. Gestational trophoblastic neoplasia though a rare clinical case could be kept as a differential diagnosis in a patient with perimenopausal age group with irregular bleeding. In the present case, hysterectomy is considered if the patient had severe active bleeding. Exaggerated placental site is a condition at the extreme end of the physiological process rather than a true lesion; therefore, the pathological role of EPS needs to be further investigated.

Reference: J. Obstet. Gynaecol. Ind., April 2016; 66(2): 120-122



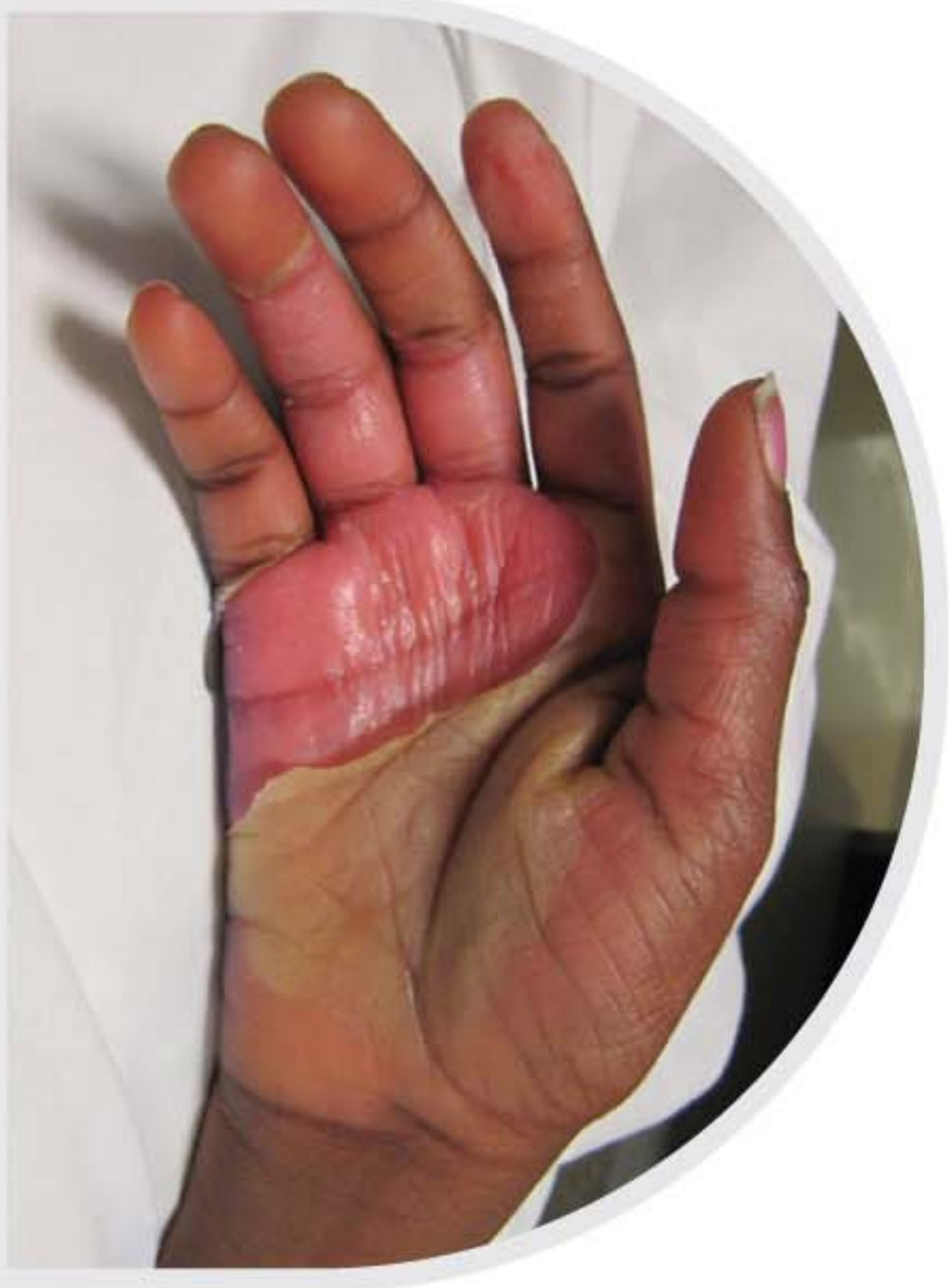
Unusual bursal fluid

A 73 year old man with seropositive rheumatoid arthritis and extra-articular involvement (rheumatoid nodules on the right elbow) presented with persistent, painless swelling of the left elbow. His medical history was unremarkable except for hypertension. The disease had been in clinical and serological remission state since treatment with methotrexate had been initiated. Findings on ultrasonographic examination were consistent with left olecranon bursitis. On aspiration, the bursal fluid appeared viscous, thick and purulent. The bursal white cell count was 2700 per cubic millimeter. Microbial cultures were negative. The fasting serum cholesterol level was normal. Since there was no improvement with local injection of glucocorticoids, the patient was referred for surgical removal of the bursa. Cholesterol crystals are occasionally seen in the bursal fluid of patients who have rheumatoid arthritis.

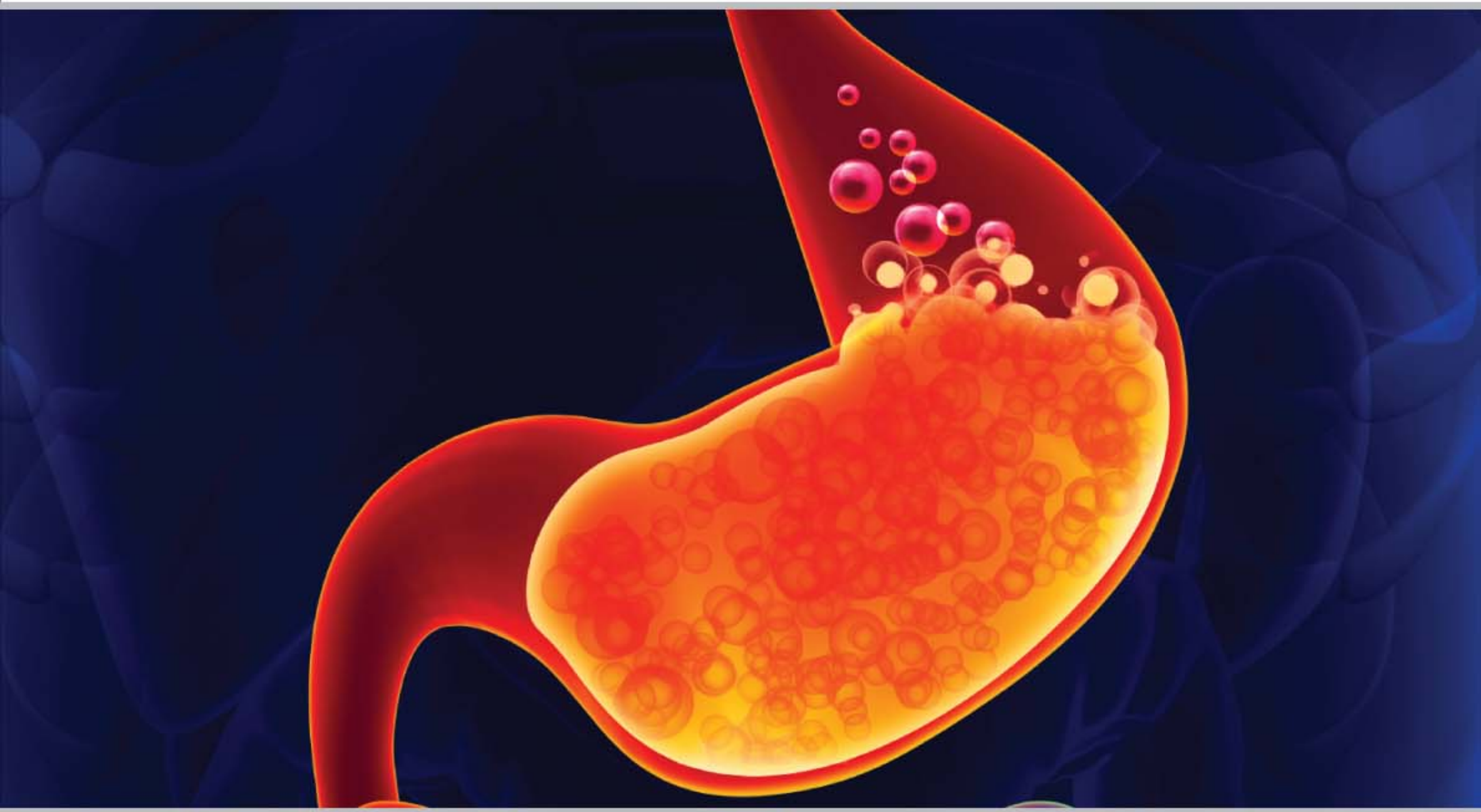
Reference: N. Eng. J. Med., 14 November 2013, Vol. 369, No. 20:1945

Staphylococcal toxic shock syndrome

A 33 year old woman presented with a 4 day history of fever and abdominal pain, 7 days after undergoing a cesarean section. She had diffuse erythroderma and the blood pressure was 85/48 mm Hg. A workup revealed elevated creatinine and liver enzyme levels and specimens of urine and specimens from the vagina were cultured and grew. Her condition worsened over the next day, with acute respiratory distress; subsequently, desquamation of her hands occurred. A diagnosis of staphylococcal toxic shock syndrome was made. Desquamation is characteristic of staphylococcal toxic shock syndrome, typically occurring 1 to 2 weeks after the onset of illness and typically involving the palms and soles. With supportive care and the administration of floxacillin, the patient recovered completely. The skin changes resolved within 4 weeks after the onset of illness.



Reference: N. Eng. J. Med., 14 November 2013, Vol. 369, No. 20:1945



Management of gastroesophageal reflux disease

Introduction

Gastroesophageal reflux disease (GERD) is arguably the most common disease encountered by the gastroenterologist and it becomes a disease when it either causes macroscopic damage to the esophagus or causes symptoms that reduce the quality of life. GERD should be defined as symptoms or complications resulting from the reflux of gastric contents into the esophagus or beyond, into the oral cavity (including larynx) or lung. GERD can be classified as the presence of symptoms without erosions on endoscopic examination (non-erosive disease or NERD) or GERD symptoms with erosions present (ERD). Any risk factors for GERD, the diagnostic modalities and their recommendation for use and recommendations for medical, surgical and endoscopic management including comparative effectiveness of different treatments are described accordingly here. In this review, we provided an overview of GERD and its presentation and recommendations for the approach to diagnosis and management of this common and important disease.

Pathogenesis

Gastroesophageal reflux disease results from continued exposure of the esophageal mucosa to gastric secretions, particularly acid and pepsin. A number of anatomical and physiological mechanisms normally prevent reflux from occurring and derangement in any of these can promote esophageal acid exposure. The most important factors at work in preventing reflux includes the lower esophageal sphincter (LES), esophageal clearance mechanisms that limit contact time with noxious substances and mucosal protective factors intrinsic to the esophageal mucosa. The most common cause of gastroesophageal reflux is an excessive exposure of the esophagus to gastric secretions during transient lower esophageal sphincter relaxation (TLESR). These relaxations normally last for approximately 10 to 30 seconds and occur in response to gastric distention and vagal stimulation. Patients with GERD, however, have a higher frequency of TLESRs associated with reflux and as a consequence, a significantly prolonged duration of esophageal acid exposure.

The contribution of TLESRs to GERD is greatest for patients with upright (day time) reflux and nonerosive or mild erosive disease. Patients with more severe grades of esophagitis typically have other factors such as hiatus hernia or decreased LES pressure, responsible for prolonged acid exposure. The entry of acid into the esophagus activates clearance mechanisms that limit exposure of the esophageal mucosa to gastric secretions. These include esophageal contractions (secondary peristalsis) that rapidly propel the refluxate into the stomach. Swallowing bicarbonate rich saliva and secretion of bicarbonate by esophageal glands neutralizes any residual esophageal acid trapped in contact with the mucosa. Patients with either defective esophageal motility or decreased salivary secretion are predisposed to GERD.

Symptoms

GERD are based primarily on the typical symptoms of heartburn and regurgitation, these symptoms are frequent in persons with GERD who are not receiving adequate treatment. Heartburn is the most common symptom of GERD. It usually feels like a burning pain in the chest, beginning behind the breastbone and moving toward the neck and throat. It often worsens after eating and while lying down and can last for a couple of hours at a time. Pain results from the irritating effects of stomach acid on the inner esophagus wall, which does not have the same natural protection from acid that exists in the stomach lining. Another common symptom is a sensation of food or liquid coming up into the throat or mouth (regurgitation), especially when bending over or lying down. This can leave a bitter or sour taste in the mouth. GERD patients can also experience some less common symptoms, including persistent sore throat, hoarseness, chronic coughing, difficult or painful swallowing, asthma, unexplained chest pain, bad breath, a feeling of a lump in the throat and an uncomfortable feeling of fullness after meals. The most frequent atypical manifestations are non coronary chest pain, respiratory manifestations (cough and bronchial asthma), otorhinolaryngologic disorders such as dysphonia, throat clearing and pharyngeal globus sensation and oral disorders such as dental erosion, aphtha and halitosis (Table-1).

Diagnosis

A careful history is essential to establish the diagnosis of GERD. If a patient has classic symptoms of heartburn and acid regurgitation, the diagnosis can be made with high specificity, yet the sensitivity remains low. GERD can be missed in patients with heartburn and some patients with Barrett's esophagus or adenocarcinoma of the esophagus, do not complain of heartburn. Only 2% to 3% of acid reflux events reach the conscious level and are perceived by patients with GERD. Furthermore, many patients with GERD present with atypical symptoms although the presence of such symptoms is not required for clinical diagnosis. The ACG guidelines address the role of empiric therapy, endoscopy, ambulatory reflux monitoring and esophageal manometry in the diagnosis of patients with GERD (Table-2).

Diagnostic guideline I: empiric therapy

In patients who have a history of typical uncomplicated GERD, an initial trial of empiric medication and lifestyle changes is appropriate. Most patients with GERD experience symptom relief through medical therapy, so empiric therapy is a simple and cost effective (although not optimally sensitive or specific) diagnostic test. A diagnosis of GERD can be assumed in patients who respond to therapy; however, unresponsive symptoms do not rule out GERD. In patients with symptoms of GERD that are refractory to therapy, additional testing should be considered to exclude complications and the diagnosis may need to be changed.

Diagnostic guideline II: endoscopy

Endoscopy is the preferred technique for diagnosing complications of GERD because it allows for evaluation of the esophageal mucosa. Endoscopy at presentation and additional testing should be considered in patients with symptoms suggestive of complicated disease and in those at risk for Barrett's esophagus; endoscopic biopsy is the only reliable method for the diagnosis of Barrett's esophagus and evaluation for dysplasia. Endoscopy may be more reliable when performed after initial therapy, because inflammatory changes that could be mistaken for dysplasia would

Table-1 Typical and atypical GERD manifestations

Typical manifestations	Atypical manifestations		
	Pulmonary	Othorhynolaringological	Orals
Heartburn Acid regurgitation	Chronic cough Pharyngitis Throat clearing Pneumonia Bronchiectasia Asthma	Hoarseness Otitis Sinusitis	Dental erosion Halitosis Aphtha

be less prevalent; however, Los Angeles endoscopic classification for GERD is given in Table-2. Barium radiography is 80% accurate for severe esophagitis, but is neither sensitive nor specific for diagnosing GERD and is not recommended. The presence of barrett's esophagus or esophagitis is diagnostic for GERD but normal endoscopy results are not found in the majority of symptomatic patients and neither rule out GERD nor indicate a lower severity of symptoms.

Table-2 Los Angeles endoscopic classification for GERD

Degree	Finding
A	One or more erosions smaller than 5 mm
B	One or more erosions greater than 5 mm in its greater extension, non-continual between esophageal fold apices
C	Contiguous (or convergent) erosions between at least esophageal fold apices, commitment of less than 75% of the esophagus
D	Erosion of at least 75% of the esophagus circumference

Diagnostic guideline III: ambulatory reflux monitoring

Ambulatory reflux monitoring of the esophagus with pH testing is the best tool for studying actual amounts of reflux in a given patient. It can help confirm reflux in patients with normal endoscopic findings and in those whose symptoms continue despite an acid suppression trial or therapy. Ambulatory pH reflux monitoring is highly sensitive and specific (96%) in patients with erosive esophagitis and although some inaccuracies have been reported. It enables the identification of excess esophageal acid exposure and esophageal acid related symptoms. In the future, ambulatory testing may be achieved by radiotelemetry capsule monitoring, in which a capsule is attached to the esophageal mucosa or combined impedance and acid testing to measure acid and non acid reflux.

Diagnostic guideline IV: esophageal manometry

Esophageal manometry generally is used to accurately place ambulatory pH monitoring probes, although adequate placement recently has been reported with a tubeless system. This technique is useful for excluding rare motility disorders such as achalasia and scleroderma in patients being considered for antireflux surgery and also has been used preoperatively to measure peristalsis. However, the diagnostic tools for gastroesophageal reflux disease are summarized in Table-3.

Treatment

Various treatment options including lifestyle modification, patient directed therapy, acid suppression, use of promotility agents, maintenance therapy and surgery are evaluated in the ACG guidelines.

Treatment guideline I: lifestyle modification

The results of most randomized trials show a 20% to 30% response to symptoms of GERD with placebo therapy and this often is attributed to lifestyle modifications. The true efficacy of lifestyle modifications has yet to be documented reliably but many studies have indicated that they may reduce distal esophageal acid exposure. Modifications thought to be effective include elevating the head of the bed, reducing fat intake, quitting smoking and remaining upright for three hours after meals. Foods

Table-3 Diagnostic tools for gastroesophageal reflux disease

Method	Comments
Typical symptoms	Heartburn and regurgitation highly specific for GERD
Empiric therapy	Appropriate (with lifestyle modifications) in patients with history typical of uncomplicated GERD; simple and cost effective; not highly sensitive or specific; lack of response does not rule out GERD
Endoscopy	Typical symptoms with endoscopic changes 97% specific for GERD; preferred technique for diagnosing complications of GERD; should be considered at presentation in patients with possible complications; negative results do not rule out diagnosis
Ambulatory pH reflux monitoring	Best tool for studying actual reflux amounts; can confirm diagnosis in patients with normal endoscopy results or unresponsive symptoms; highly sensitive and specific for erosive esophagitis
Esophageal manometry	Useful preoperatively for excluding rare motility disorders

such as chocolate, alcohol, peppermint, coffee, onions and garlic are reported to decrease lower esophageal sphincter pressure, but no randomized trials on their efficacy are available. Although lifestyle modifications alone are not likely to control symptoms in most patients with GERD, they may be beneficial and educating patients about behaviors that may contribute to reflux is therefore reasonable. However, lifestyle modifications that may improve the symptoms of GERD are given in Table-4.

Table-4 Lifestyle modifications for GERD

Positional modifications
Avoid lying supine for 2 to 3 hours after a meal
Elevate the head of the bed
Sleep left side down
Dietary modifications
Avoid foods that precipitate symptoms
High fat foods
Citrus fruits
Tomato based foods
Coffee (including decaffeinated brands)
Chocolate
Alcohol
Others
Avoid smoking
Lose weight
Avoid classes of drug known to cause reflux (calcium channel blockers, anticholinergic medications)

Treatment guideline II: patient directed therapy

Over the counter medications such as antacids and antirefluxants (e.g., alginic acid) are viable treatment options for milder forms of GERD and may relieve symptoms in approximately 20% of patients. A combination of the two therapies may be more effective than antacids alone. Histamine H2 receptor antagonists (H2RAs) have been shown to decrease gastric acid and can be used as premedication by patients who are able to predict symptom occurrence. H2RAs are thought to remain effective for longer than antacids, although their peak potencies are similar. Patients should not self-medicate for more than 14 days without further physician evaluation because of the risk of Barrett's esophagus and other complications.

Treatment guideline III: acid suppression

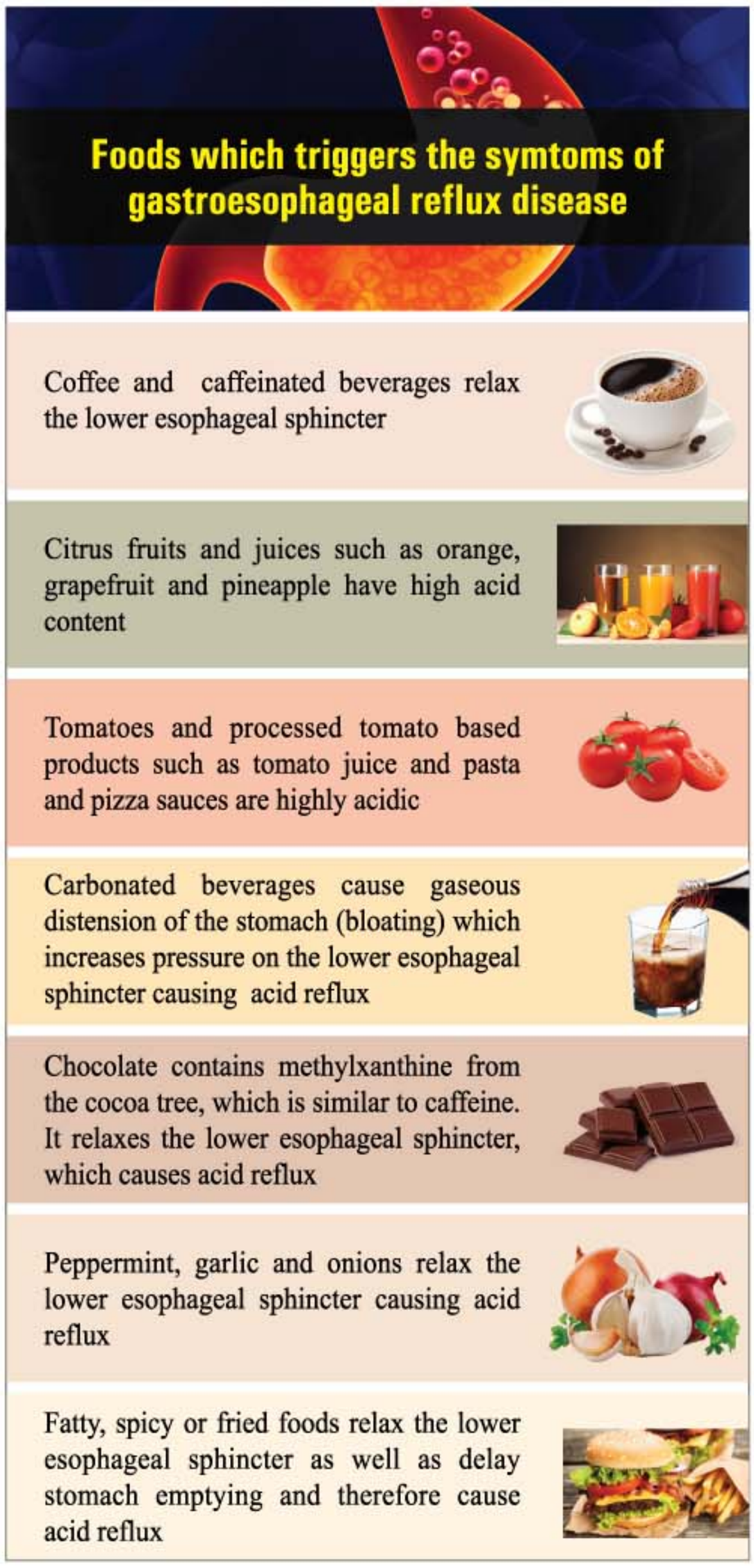
Acid suppression is the basis of treatment for GERD and can be accomplished most quickly and effectively with PPIs. In 33 randomized trials that included more than 3,000 patients with erosive esophagitis, more patients experienced symptom relief and healing of esophagitis with PPI therapy (approximately 80%) than with H2RA therapy (50% to 60%). Even when higher and more frequent doses of H2RAs are used, the improvement rates do not match those of PPIs.

Long term PPI therapy is extremely beneficial in patients with chronic or complicated GERD and safety concerns are minor (e.g., possible vitamin B12 deficiency). Commonly used PPIs are omeprazole, rabeprazole, esomeprazole, lansoprazole and pantoprazole and they are effective in prescription dosages; they should be taken before meals (generally before breakfast if taken once daily, although a recent study proposed taking PPIs before the evening meal to control night time acid). Higher than approved dosages of PPIs may be appropriate in certain situations, such as in patients who show only a partial response to standard doses or are having breakthrough symptoms in empiric treatment trials for supraesophageal GERD symptoms and in cases of severe esophageal dysmotility or Barrett's esophagus. The dose should be divided and the second dose given before the evening meal, not at bed time.

There is no proven benefit to controlling acid in patients with Barrett's esophagus, but if these patients want complete acid control, high dose twice daily PPI therapy is necessary. In many patients, gastric acid will still be secreted. An additional night time H2RA may be effective, but probably not in the long term. Strategies to limit the number of patients using continuous PPI therapy have been proposed, but not well tested. The only advantage is economic and because generic and over the counter PPIs are available, even this benefit is small. According to one study, out of 71 patients on PPIs, 42% could be treated effectively with lower cost medications and 15% could eliminate medication altogether. On demand PPI therapy may make sense for patients with mild to moderate symptoms, but studies are lacking. Patients who have tried less effective medications without success should have access to long term PPI therapy.

Treatment guideline IV: promotility therapy

Esophagogastric motility problems such as lower esophageal sphincter incompetence and delayed gastric emptying are a root cause of GERD and correcting these issues would make acid suppression unnecessary. Available promotility agents (e.g., tegaserod, baclofen) may be useful in select patients with GERD, particularly as an adjunctive acid suppressant. However, these agents have not proved effective as monotherapy for GERD and high side effect profiles have decreased their use.



Treatment guideline V: maintenance therapy

Because GERD is a chronic condition and symptoms usually return once PPI therapy is stopped; continuous, even lifelong, therapy is appropriate. Maintenance therapy will vary depending on the patient; the goal is to keep symptoms under control and prevent complications. Up to 20% of patients may need only antacids with lifestyle changes, but up to 50% will relapse frequently despite therapy. Medication should be given in whatever dosage is effective.

Full dose PPI therapy may reduce symptom relapse, but reduced dose PPIs (e.g., alternate day esomeprazole) have consistently proved ineffective for long term management of GERD. Patients who experience relief with PPIs often relapse when given standard or high dose H2RAs with or without prokinetic therapy; once daily dosages of H2RAs are not appropriate for patients with GERD. Acid suppression has been proved to decrease the recurrence of peptic esophageal strictures but Barrett's esophagus does not appear to regress. Squamous epithelium has been reported in association with long term PPI therapy, although its significance remains unclear.

Treatment guideline VI: surgery

One option for the maintenance of GERD is antireflux surgery or repair of the lower esophageal sphincter. The effectiveness of surgical therapy is controversial: in early trials, surgery was more effective than medication, but only low efficacy treatments were used in comparison. Poorer outcomes and more complications are found in low volume centers.

Candidates for surgery must be carefully selected and evaluated. Typical reflux symptoms are more likely to be relieved by surgery than are atypical and supraesophageal symptoms. According to one study that involved 100 patients, the best predictors for good surgery outcomes were age younger than 50 years and typical reflux symptoms that resolved completely with medical therapy, although lack of response to therapy often is used as a rationale. Patients with nocturnal regurgitation and those with duodenogastroesophageal reflux may benefit from surgery; more data are needed to determine which patients would benefit most. Complications of surgery may be increased with delayed gastric emptying but there is no clear indication for routine preoperative testing. Deterioration of lower esophageal sphincter pressure and endoscopic histology after five or six years postoperative has been reported.

The availability of laparoscopic antireflux surgery has increased patient acceptance of surgical therapy. Laparoscopic techniques have been found to lower the cost of treatment and shorten the duration of hospital stay as well as reduce postoperative morbidity, although postoperative symptoms (e.g., dysphagia, belching, flatulence, diarrhea) still are common. Laparoscopic surgery may increase dysphagia compared with an open technique, may not be possible in patients who have had previous surgery and may be less effective in very obese patients. However, the treatment options for gastroesophageal reflux disease are summarized in Table-5.

Treatment guideline VII: endoscopic therapy

Endoscopic therapy is relatively new and systematic reviews have found no definite indications for its use. However, select well

Table-5 Treatment options for gastroesophageal reflux disease

Treatment	Comments
Acid suppressants	
Proton pump inhibitors	Most effective agents; long term therapy beneficial for chronic or complicated GERD; higher than approved dosages may be appropriate in certain situations. Little evidence favoring one agent over another; should be taken before breakfast or evening meal for optimal benefit
Histamine H2 receptor antagonists	Can be used as premedication before meals; may remain effective for longer than antacids; once daily dose is not appropriate for long term use
Over the counter antacids and antirefluxants	Viable for milder GERD and short term treatment; patients should not self-medicate antirefluxants for more than 14 days without seeing a physician because of the risk for complications
Lifestyle modifications	
Elevate the head of the bed; reduce fat intake; quit smoking; remain upright three hours or more after meals	Widely recommended, although true efficacy is unclear; lifestyle modifications alone are unlikely to control symptoms
Promotility agents	
Tegaserod and baclofen	Correct esophagogastric motility problems that are root cause of GERD, making acid suppression unnecessary not proven effective as monotherapy for GERD; high side effect profiles; may be useful as adjunctive acid suppressant
Surgery	
Open	More effective in patients with typical symptoms of GERD that respond to medication; more data needed
Laparoscopic	Lower cost and decreased length of hospital stay compared with open surgery; more accepted by patients; may increase dysphagia; possibly less effective in obese patients
Endoscopic	Endoscopic therapy is relatiely new and systematic reviews have found no definite indications for its use

informed patients with well documented GERD that is responsive to therapy with PPIs may benefit from the procedure. Three categories of endoscopic technique have been studied: (1) radiofrequency application to increase the lower esophageal sphincter reflux barrier; (2) endoscopic sewing devices; and (3) injection of a nonresorbable polymer into the lower esophageal sphincter area. All techniques seemed to improve reflux symptoms, but normalization of intraesophageal acid exposure was limited and there were no significant changes in lower esophageal sphincter pressure. Possible complications of radiofrequency application include perforation, hemorrhage and death. Data are needed on the long term durability and safety of endoscopic techniques, their usefulness in patients with atypical gastroesophageal reflux disease and their efficacy outside the study setting.

Conclusion

GERD is a major digestive health problem. Careful history taking is fundamental for the diagnosis of GERD with special analysis of the typical and atypical symptoms. Endoscopy and ambulatory reflux monitoring of esophagus with pH testing are the most sensitive diagnostic methods. The clinical treatment is useful in controlling the symptoms; however, the great problem is keeping the patients asymptomatic over time. Surgical treatment is indicated for patients who required continued drug use, intolerant to the drugs and with complicated forms of GERD.

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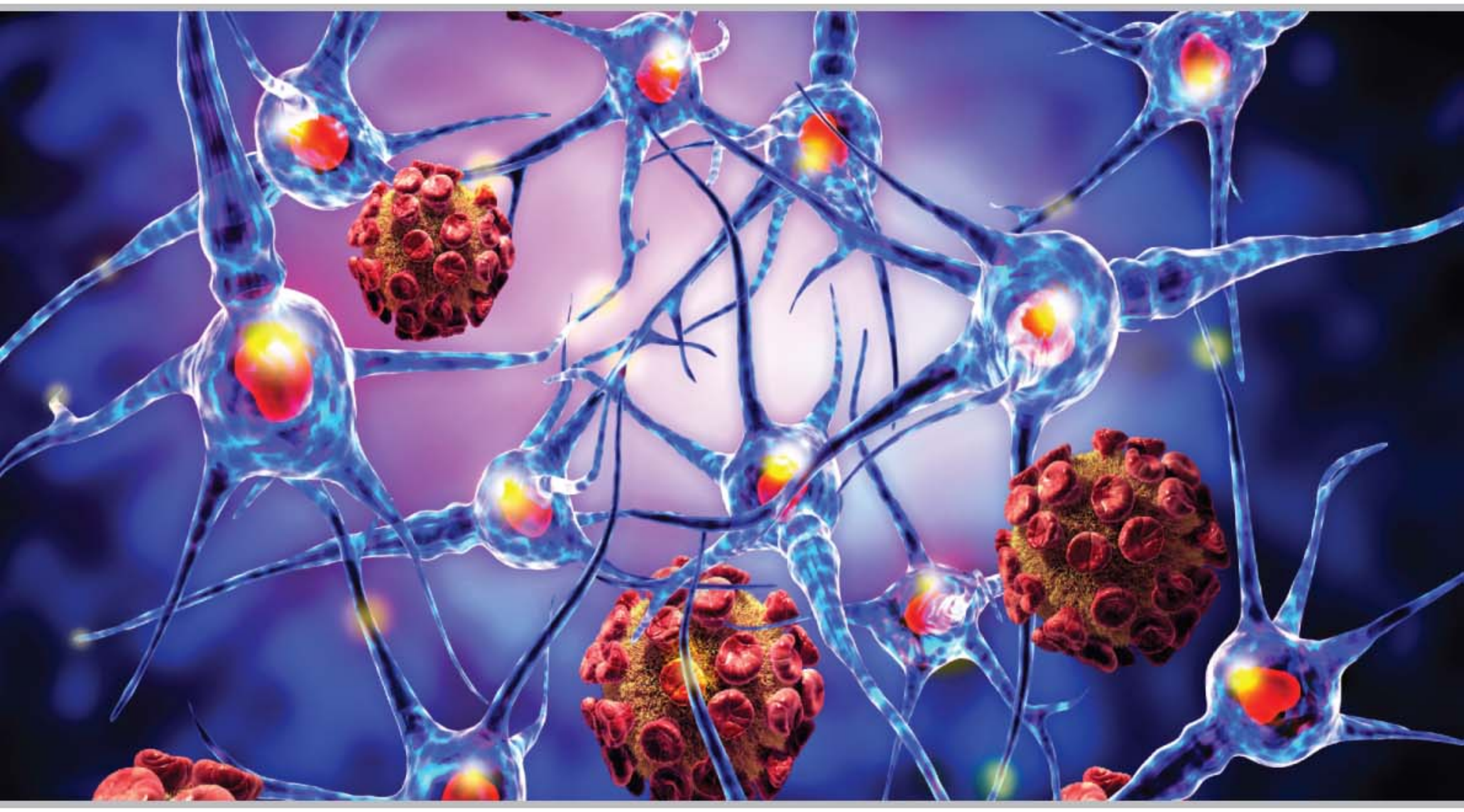
World
HYPERTENSION DAY
May 17

HISTORY OF WORLD HYPERTENSION DAY

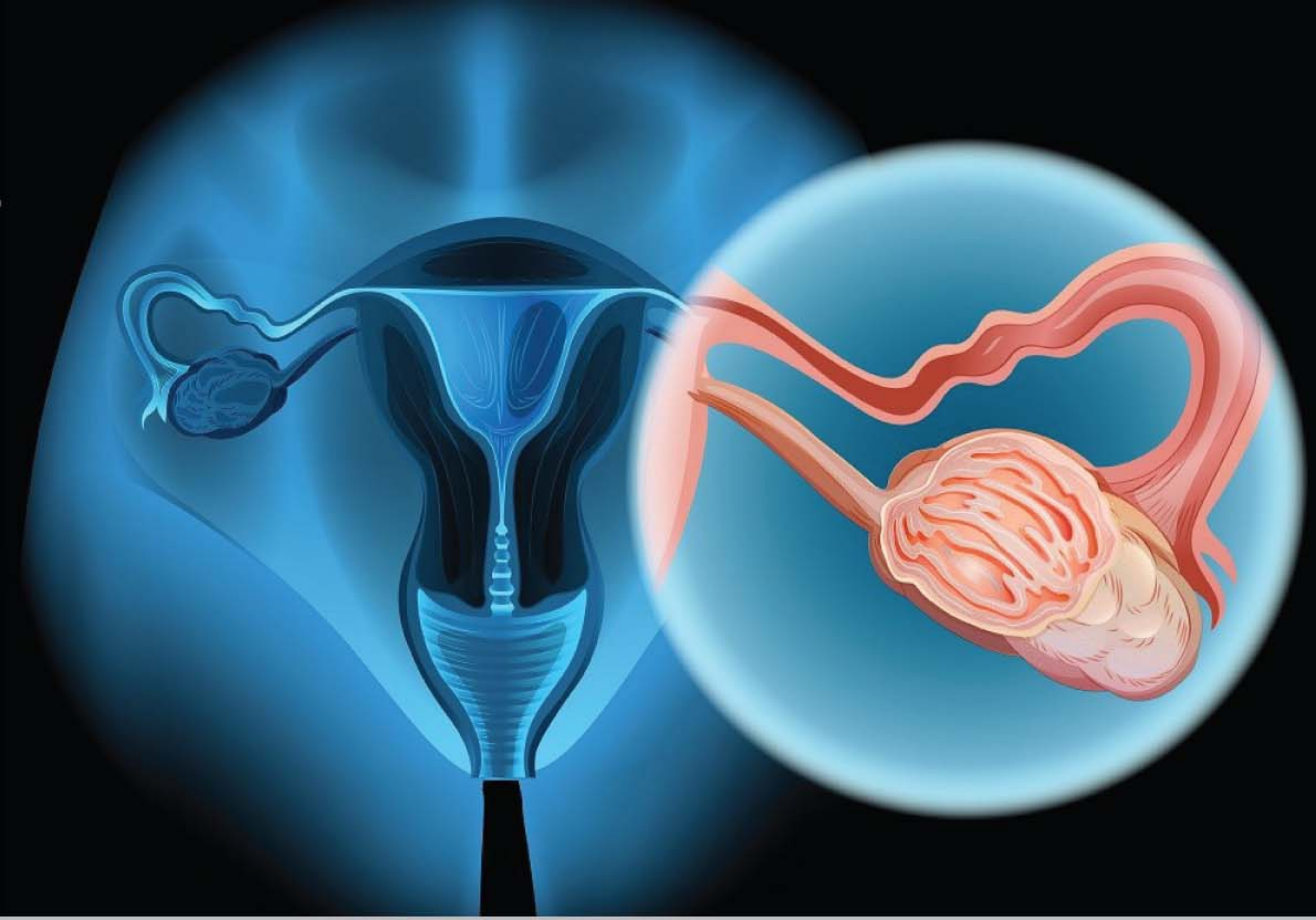
Celebrating World Hypertension Day all over the world was established and started for the first time on 14 May in 2005 by the World Hypertension League (WHL) to increase the common public awareness about hypertension. However, it was started celebrating dedicatedly every year on 17 May since 2006. WHL is a health organization lead around 85 national hypertension societies and associations worldwide. It aimed to fill the gap of the lack of appropriate knowledge among people about the hypertension and people suffering of it.



Multiple sclerosis: skin cells may help to repair nerve damage

A personalized treatment for multiple sclerosis may be one step closer. A new study that reveals how a person's own skin cells could be used to repair the nerve damage that the disease causes. Led by scientists at the University of Cambridge in the United Kingdom, the study took skin cells from adult mice with multiple sclerosis (MS) and then reprogramed them into neural stem cells (NSCs). NSCs are stem cells that have the ability to transform into different types of cell in the CNS including neurons and glial cells. These "induced neural stem cells" (iNSCs) were transplanted into the rodents cerebrospinal fluid. The researchers found that this led to a reduction in levels of succinate, which is a metabolite that the team found is increased in MS. This increase prompts microglia a type of glial cell found in the CNS to trigger inflammation and cause nerve damage. By reducing succinate levels, the iNSCs reprogrammed the microglia which, in turn, reduced inflammation and brain and spinal cord damage in the mice. Previous research has investigated the use of NSCs for the treatment of MS. However, there are some barriers to this strategy. As lead study author Dr. Stefano Pluchino, of the Department of Clinical Neurosciences at the University of Cambridge and team note, NSCs are derived from embryos and it would be hard to obtain them in high enough quantities to sustain clinical treatment. It is also possible that the immune system would see embryo derived NSCs as foreign invaders and try to destroy them. As such, researchers have turned their attention toward iNSCs, or NSCs that can be developed by reprogramming adult skin cells. Importantly, since these cells would be derived from the patients themselves, the risk of an immune system attack would be significantly reduced. Of course, human clinical trials are needed before iNSCs can be considered as a suitable treatment for MS, but this latest study certainly shows promise.

Reference: www.medicalnewstoday.com



New genetic link reveals some ovarian cancer passed down by fathers

A previously unrecognized link has been found between ovarian cancer and a gene on the X chromosome, according to a new study. The gene called MAGEC3 which normal version is thought to be protective against tumor formation and mutations of this gene may lead to cancer. The study identified the gene by comparing more than 3,000 grandmother or granddaughter pairs from the Familial Ovarian Cancer Registry at the Roswell Park Cancer Institute in Buffalo, New York. Dr. Kevin Eng, an associate professor of oncology at the Roswell Park Comprehensive Cancer Center and a leading author of the study and his colleagues theorized that, because women have two X chromosomes but men have only one, a mutated gene on the X chromosome would be shared twice as often between paternal grandmother or granddaughter pairs than maternal pairs. Men who carry the gene may still be at risk. Those with the mutation were significantly more likely to develop other types of cancer, particularly prostate cancer, according to Dr. Kevin Eng. The researchers found that overall, 28.4% of the granddaughters in the paternal pairs developed ovarian cancer, compared with 13.9% of the granddaughters in the maternal pairs. The study's findings could change the way doctors perform family histories for gynecologic cancers, according to Dr. Krishnansu Tewari, a professor of obstetrics and gynecology and interim director of the Division of Gynecologic Oncology at the University of California, Irvine. Dr. Tewari said "whenever we talk about genetic testing, we are usually so focused on the first degree relatives the mother, the daughter, the sister and we always think of the grandmother as a second degree relative but in this case, a paternal grandmother could be very critical. If a father has a mutation on chromosome 3 and the mother does not, there is only a 50 % chance for each child to inherit a bad chromosome 3. But if the father's one X chromosome has a mutation, then all of his daughters will inherit that bad X chromosome because the father determines the sex of the child." Dr. Tewari added that "once the putative gene is validated, we can sequence it, we can clone it, we can test for it and we can potentially save many women from ovarian cancer and some men from prostate cancer."

Reference: edition.cnn.com

ADVANCING POSSIBILITIES

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