Robert Edwards: Medicine Nobel Prize 2010 Winner

British scientist, Robert G. Edwards has been awarded this year’s Nobel Prize in Medicine or Physiology for the development of human in vitro fertilization (IVF) therapy. His achievements towards IVF made it possible to treat infertility, a medical condition afflicting large proportion of humanity including more than 10% of all couples worldwide. As early as the 1950s, Edwards had the vision that IVF could be useful as a treatment for infertility. He discovered important principles for human fertilization, and succeeded in accomplishing fertilization of human egg cells in test tubes. His efforts were finally crowned by success on July 25, 1978, when the world's first ‘test tube baby’ was born. Approximately four million individuals have so far been following IVF. Many of them are now adult and some have already become parents. A new field of medicine has emerged, with Robert Edwards leading the process all the way from the fundamental discoveries to the current, successful IVF therapy. His contributions represent a milestone in the development of modern medicine.
October 1, 2010

Dear Doctor,

We thank you from the bottom of our heart for your overwhelming support and appreciations towards the newly adorned Medical Newsletter. Our team has been working effortlessly to achieve your academic quest and satisfaction. This time we have discussed common oral health problems which usually fail to attract much importance from general population. We seek for medical assistance and expert advice only when it comes to an emergency situation. Therefore, giving appropriate advice on oral health care is mandatory for every general practitioner to create awareness and improve the situation. Infectious diseases have been a common health problem of the developing nations affecting millions of people. Lack of surveillance is one of the impotent factors contributing to such situation. The article on Kala-Azar is an in time topic as every year many of our countrymen are being affected by this lethal infectious disease and go through immense sufferings. Information regarding the ongoing recent management and surveillance strategies may help to overcome this crisis.

Within the last few months we have been through an outbreak of Anthrax along the northern zone of Bangladesh which later spread some other parts of the country. The Government had to put a red alert. We have tried our best to discuss Anthrax and share the necessary information among the health care authorities in order to abolish the panic and misconception among general population. Pregnancy is the most exciting journey towards the divine sensation of motherhood. This excitement comes with a whole lot of medical emergencies some of which requires emergency resuscitation. Resuscitation during pregnancy has a quite different management procedure with the aim of saving two lives at a time. We have highlighted this special situation in order to handle with expertise in such cases.

We have our other topics like, diagnosing otitis media along with otoscopy and cerumen removal under the banner of "Procedure in Practice" and other useful recent trial outcomes in "Medical Research Update". We hope you will enjoy this issue of our Medical Newsletter. Thank you for being with us all through our journey and giving us your valuable support.

With regards,

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Oral health may be defined as a standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well being. Although the oral health overall has improved dramatically in the last 50 years, a segment of society has been left behind. People with low incomes, minorities and immigrants, those with special health care needs, and people in rural areas have the greatest difficulty accessing care and maintaining good oral health. Recent research evidence suggests that common oral disorders can have significant impact on systemic health and the quality of life. They affect the well-being of individuals of all ages and society as a whole. This article, however, aims to focus on salient issues regarding some common oral health problems.

Oral Ulcer

Oral ulcers are common, with an estimated point prevalence of 4% in the United States. Aphthous ulcers may affect as many as 25% of the population worldwide. Patients with an oral ulcer may present initially to a general practitioner or a dental practitioner. Most ulcers are benign and resolve spontaneously but a small proportion of them are malignant. The incidence and prevalence of oral cancers varies across the world. Some of the highest incidences are seen in the Indian subcontinent, southern France, and South America. Importantly, the incidence of oral cancer is rising in most populations, particularly in young women. In the United Kingdom, around 2500 cases of oral cavity cancers are seen every year.

Etiology

Oral ulcers may have a great many causes, although in some no cause is identified. Oral ulcers are termed acute if they persist for less than three weeks duration and chronic if they persist for longer than three weeks. Trauma, minor aphthous ulcers, drugs, and infections are responsible for most cases of acute, self-limiting oral ulcers. Traumatic injury to the oral mucosa may be caused by a sharp tooth margin, an overextended denture flange or cheek biting. Chemical or thermal trauma can also cause oral ulceration. Traumatic ulceration may mask or mimic more serious causes. The majority of chronic oral ulcers are accounted for by major aphthous ulcers, traumatic ulceration with persistent irritation (for example, from a sharp tooth, denture flange, or in rare cases deliberate self harm), oral lichen planus, drugs, and chronic infections.

Clinical Features

Minor aphthous ulcers are painful, discrete, and round, measuring less than 1 cm in diameter with a grayish base and a red halo. As many as six may occur at a time on multiple oral mucosal sites. Major aphthous ulcers tend to be larger and may involve the keratinized oral mucosa such as the hard palate. Large
Malignant Causes of Oral Ulcers

- Oral squamous cell carcinoma (most common)
- Lymphoma
- Minor salivary gland tumors
- Tumor extension from maxillary sinus
- Odontogenic tumors
- Metastatic neoplasms
- Neoplasms of bone
- Neoplasms of connective tissue
- Neoplasms of melanocytes
- Vascular Neoplasms

Clinical Features of Malignant Oral Ulcers

Features that should raise suspicion:
- Non-healing painless ulcer present for >3 weeks
- Induration and lack of inflammation surrounding the ulcer
- Ulcer with rolled thickened edge
- Smoking and alcohol use
- Age (85% of cases at age >50 years)
- Male sex (2:1)
- Previously diagnosed premalignant lesion in the area
- No history of previous ulceration
- No local factors that could potentially cause ulceration
- No systemic factors that could potentially cause ulceration
- History of oral squamous cell carcinoma

Features that may reduce suspicion:
- Recurrent ulceration that heals in between episodes
- Multiple ulcers that occur synchronously
- Clustering of ulcers
- Occurrence in association with systemic disease, especially autoimmune
- Blister formation
- Associated sore and bleeding gums
- Identifiable local causes (for example, sharp tooth)

Oral squamous cell carcinoma

Ulcers may take longer than three weeks to resolve and often leave a scar. Their clinical appearance may suggest malignancy. Oral squamous cell carcinoma typically presents as a non-healing painless ulcer. Varying presentation in the early stages can lead to misdiagnosis.

Diagnosis and Management

Patients often need symptom relief even before a diagnosis is established. The options include saline mouthwash, topical analgesics or anti-inflammatory preparations (such as benzydamine, available as mouthwash or spray), antimicrobial agents (such as chlorhexidine, available as mouthwash, spray or gel), barrier paste (such as carmellose gelatin), topical anaesthetics (such as lidocaine, available as spray or ointment), and systemic analgesics. Conditions that predispose to oral ulceration, such as iron deficiency anemia, vitamin B₁₂ deficiency, and folate deficiency can be excluded in primary care. In case of aphthous ulceration, topical corticosteroids (such as 0.1% triamcinolone) or chronic use of salicylate (8.7%) gel can effect healing. Rarely, patients have very severe recurrent aphthous ulcers and need oral corticosteroids. In case of malignancy, general medical practitioners should focus initially on identifying features that suggest a malignant process, which would trigger urgent referral to secondary care. If malignancy has been excluded or is extremely unlikely other diagnoses may be considered. Occasionally, biopsy is necessary for diagnosis. In case of oral cancer, if it is small, it can be resected but extensive surgery with neck dissection to remove involved lymph nodes may be necessary. Some patients can be treated with radical radiotherapy alone, and radiotherapy is sometimes also given after surgery to treat microscopic residual disease. Some tumors may be amenable to photodynamic therapy, avoiding the need for surgery.

Oral Candidiasis

Oral candidiasis is an opportunistic infection of the oral cavity. It is common and underdiagnosed among the elderly, particularly in those who wear dentures and in many cases is avoidable with a good mouth care regimen. It can also be a mark of systemic disease, such as diabetes mellitus and is a common problem among the immunocompromised patients. It is the most common human fungal infection, especially in early and later life. It is caused by an overgrowth or infection of the oral cavity by a yeast-like fungus, candida. The important and commonest one is Candida albicans. Overgrowth of candida, however, can lead to local discomfort, an altered taste sensation, dysphagia from
esophageal overgrowth resulting in poor nutrition, slow recovery, and prolonged hospital stay. In immunocompromised patients, infection can spread through the blood stream or upper gastrointestinal tract leading to severe infection with significant morbidity and mortality. Systemic candidiasis carries a mortality rate of 71% to 79%.

Classification

**Acute Candidiasis:** *Pseudomembranous candidiasis* (thrush) is characterised by extensive white pseudomembranes consisting of desquamated epithelial cells, fibrin, and fungal hyphae. These white patches occur on the surface of the labial and buccal mucosa, hard and soft palate, tongue, periodontal tissues, and oropharynx. **Acute atrophic candidiasis** is usually associated with a burning sensation in the mouth or tongue. The tongue may be bright red similar to that seen with a low serum B\textsubscript{12}, low folate, and low ferritin.

**Chronic Candidiasis:** *Chronic hyperplastic candidiasis* characteristically occurs on the buccal mucosa or lateral border of the tongue as speckled or homogenous white lesions. There is an association with smoking and complete resolution appears to be dependent on cessation of smoking. **Chronic atrophic candidiasis**, also known as *dentine stomatitis*, is characterised by localized chronic erythema of tissues covered by dentures. Lesions usually occur on the palate and upper jaw but may also affect mandibular tissue. **Median rhomboid glossitis** is a chronic symmetrical area on the tongue anterior to the circumvallate papillae. It is made up of atrophic filiform papillae. It tends to be associated with smoking and the use of inhaled steroids.

**Angular Cheilitis:** It is an erythematous fissuring at one or both corners of the mouth, and is usually associated with an intraoral candidal infection. Other organisms implicated are staphylococci and streptococci.

Risk Factors

Impaired salivary gland function can predispose to oral candidiasis. Secretion of saliva causes a dilutional effect and removes organisms from the mucosa. Dentures predispose to infection with candida in as many as 65% of elderly people wearing full upper dentures. Wearing of dentures produces a microenvironment conducive to the growth of candida with low oxygen, low pH, and an anaerobic environment. Other factors are oral cancer/leukoplakia and a high carbohydrate diet. Extremes of life predispose to infection because of reduced immunity. Drugs such as broad spectrum antibiotics alter the local oral flora creating a suitable environment for candida to proliferate. Inhaled steroids have been shown to increase the risk of oral candidiasis by possibly suppressing cellular immunity and phagocytosis. Other factors are smoking, diabetes, Cushing's syndrome, immunosuppressive conditions such as HIV infection, malignancies such as leukemia, and nutritional deficiencies - vitamin B deficiencies have been particularly implicated.

Diagnosis and Management

Diagnosis is usually made on clinical grounds with laboratory testing. Biopsy is helpful to exclude potentially other serious oral lesions especially squamous cell carcinoma. Lesion can be confirmed microbiologically either by staining a smear from the affected area or by culturing a swab from an oral rinse. Taking a history followed by a thorough examination of the mouth, looking at the soft and hard palate, and examining the buccal mucosa in those wearing dentures after they have been removed are usually good starting points. Predisposing factors should be identified and resolved if possible, and the type, severity, and chronicity of the infection are assessed. Acute pseudomembranous and chronic atrophic candidiasis can be treated based on clinical features, but culture and sensitivity testing should be undertaken if initial therapy is unsuccessful. Oral hygiene and topical antifungals are usually adequate for uncomplicated oral candidiasis. Oral hygiene involves daily cleaning of the teeth, buccal cavity, tongue, and dentures, if present. Dentures should be cleaned and disinfected daily and left out overnight or
for at least six hours daily. The dentures should be soaked in a denture cleaning solution such as chlorhexidine as this is more effective in eliminating candida than brushing. When rinsing the mouth with the topical antifungal, dentures should be removed to allow contact between the mucosa and the antifungal. The patient should ensure that the whole mucosa is coated with the antifungal and held in the mouth for a few minutes. The incorporation of an antifungal with a denture liner has been recommended for patients with dentures who find it difficult to hold the antifungal in their mouth for a few minutes. Also the mucosal surface should be brushed regularly with a soft brush.

Topical antifungal therapy is the recommended first line treatment for uncomplicated oral candidiasis. And where systemic treatment is needed topical therapy should be continued as this reduces the dose and duration of systemic treatment required. Systemic antifungal therapy in oral candidiasis is appropriate in patients intolerant of or refractory to topical treatment and those at high risk of developing systemic infections. Angular cheilitis is treated with combination of antifungal and steroid creams and ointments. Any concurrent intraoral lesion is also treated at the same time, and dietary deficiencies should be excluded and treated if found.

The prognosis is good for oral candidiasis with appropriate and effective treatment. Failure to respond to therapy especially in chronic atrophic candidiasis is usually due to noncompliance with treatment. Relapse when it occurs is more often than not due to poor compliance with therapy; rather it is due to failure to remove and clean dentures appropriately, or inability to resolve the underlying/predisposing factors to the infection.

**Oral Health in Immunocompromised Patient**

Oral diseases in immunocompromised people tend to be more common with poor oral hygiene, malnutrition, and tobacco use. The commonest lesions are candidiasis and herpes viral infections, but others include ulcers, periodontal disease, and malignant neoplasms. Purpura and spontaneous gingival bleeding also are seen in patients with leukemia. Drugs such as cyclosporin can cause gingival swelling.

Oral lesions in patients with HIV infection or AIDS are most likely to appear when the cluster of differentiation 4 (CD4) cell count is low and are often controlled, at least temporarily, by antiretroviral treatment. Anti-HIV drugs can also cause oral problems.

**Candidiasis:** Thrush and erythematous candidiasis are common in patients with immune defects and are often an early manifestation of the immunodeficiency. There is an increase, especially in those with HIV infection or AIDS, in antifungal resistance of *Candida albicans* and in non-albicans species such as *C. krusei* and new species such as *C. dubliniensis* and *C. inconspicua*. Fluconazole in high doses, however, is often still effective.

**Viral Infections:** Herpesviruses, especially *Herpes simplex* virus, may cause herpes labialis, or oral or perioral ulcers. Hairy leucoplakia, a common corrugated (or hairy) white lesion, is usually seen in HIV infection or AIDS but may be seen in any immunocompromising state. Considerable research has provided a body of evidence that the Epstein-Barr virus (EBV) is the likely cause of this lesion.

**Mouth Ulcers:** Ulcers in immunocompromised persons may be related to aphthous type ulcers, infections (herpesviruses, mycoses especially histoplasmosis or cryptococcosis, mycobacteria or syphilis, or protozoa such as leishmaniasis), malignant neoplasms, or drugs (such as cytotoxic or antiretroviral agents). Diagnosis can be difficult, and biopsy with microbial studies may be needed to
exclude infections. Chlorhexidine and topical analgesics can be helpful as local treatments. Granulocyte colony stimulating factor or thalidomide can be helpful in HIV related aphthous-like ulceration.

Gingival and Periodontal Disease: They may be painful and cause rapid loss of alveolar bone. Improved oral hygiene, debridement, chlorhexidine, and sometimes metronidazole are needed.

Malignant neoplasms: Immuno-compromising conditions predispose patients to oral leukoplakia and carcinoma, Kaposi’s sarcoma, and lymphomas.

Kaposi’s sarcoma typically occurs on the palate or maxillary gingivae and presents as red, blue, or purple macules that progress to papules, nodules, or ulcers. It is associated with HHV-8 (Human Herpesvirus 8). It can respond badly to irradiation but responds transiently to chemotherapy. Oral lesions are often managed with intralesional vinblastine or systemic chemotherapy if there are extraoral lesions.

Lymphomas are typically non-Hodgkin’s lymphomas in the maxillary gingivae or fauces. They are part of widespread disease and are usually associated with Epstein-Barr virus infection. They are resistant to treatment, and chemotherapy is required.

Drug Induced Oral Lesions in HIV Disease: Other oral conditions may also be provoked by the diverse medication used in the management of patients with HIV disease. These include lichenoid reactions, xerostomia (didanosine, indinavir), mucosal pigmentation (zidovudine), and taste disturbances (indinavir).

Oral Health in Pregnancy

Comprehensive prenatal health care should include an assessment of oral health, but this is often overlooked. Every pregnant woman should be screened for oral risks, counseled on proper oral hygiene, and referred for dental treatment when necessary. They should be assessed for dental hygiene habits, access to fluoridated water, oral problems (e.g., caries, gingivitis), and access to dental care. Patients should be counseled to perform routine brushing and flossing, to avoid excessive amounts of sugary snacks and drinks, and to consult a dentist. Ideally, dental procedures should be scheduled during the second trimester of pregnancy when organogenesis is complete. Urgent dental care can be performed at any gestational age. The third trimester presents the additional problems of positional discomfort and the risk of vena caval compression.

Common Oral Problem in Pregnancy

Oral Lesions: During pregnancy, the oral cavity is exposed more often to gastric acid that can erode dental enamel. Morning sickness, a lax esophageal sphincter and upward pressure from the gravid uterus can cause or exacerbate acid reflux. Patients with hyperemesis gravidarum can have enamel erosions. Management strategies aim to reduce oral acid...
exposure through dietary and lifestyle changes, plus the use of antiemetic, antacids, or both. Rinsing the mouth with a teaspoon of baking soda in a cup of water after vomiting can neutralize acid. Pregnant women should be advised to avoid brushing their teeth immediately after vomiting and to use a tooth-brush with soft bristles. Fluoride mouthwash can protect eroded or sensitive teeth.

Caries: One fourth of women of reproductive age have dental caries, a disease in which dietary carbohydrate is fermented by oral bacteria into acid that demineralizes enamel. Pregnant women are at higher risk of tooth decay for several reasons, including increased acidity in the oral cavity, sugary dietary cravings, and limited attention to oral health. Untreated dental caries can lead to oral abscess and facial cellulitis. Children whose mothers have high caries levels are more likely to get caries. Pregnant patients should decrease their risk of caries by brushing twice daily with a fluoride toothpaste and limiting sugary foods. Patients with untreated caries and associated complications should be referred to a dentist for definitive treatment.

Pregnancy Oral Tumor: It occurs in up to 5 percent of pregnancies and is indistinguishable from pyogenic granuloma. This vascular lesions are typically erythematous, smooth, and lobulated; they are located primarily on the gingiva. The tongue, palate, or buccal mucosa may also be involved. Pregnancy tumors are most common after the first trimester, grow rapidly, and typically recede after delivery. Management is usually observational unless the tumors bleed, interfere with mastication, or do not resolve after delivery. Lesions surgically removed during pregnancy are likely to recur.

Loose (Mobile) Teeth: Teeth can be loosen during pregnancy, even in the absence of gum disease, because of increased levels of progesterone and estrogen affecting the periodontium. For uncomplicated loose teeth not associated with periodontal disease, physicians should reassure patients that the condition is temporary, and alone it will not cause tooth loss.

Gingivitis: It is the most common oral disease in pregnancy, with a prevalence of 60 to 75 percent. Approximately one half of women with pre-existing gingivitis have significant exacerbation during pregnancy. During pregnancy, gingivitis is aggravated by fluctuations in estrogen and progesterone levels in combination with changes in oral flora and a decreased immune response. Thorough oral hygiene measures, including tooth brushing and flossing, are recommended. Patients with severe gingivitis may require professional cleaning and need to use mouth rinses such as chlorhexidine.

Periodontitis: It is a destructive inflammation of the periodontium affecting approximately 30 percent of women of child-bearing age. In this case, the periodontium is broken down and destroyed, creating pockets that become infected. Eventually, the teeth loosen. This process can induce recurrent bacteremia, which indirectly triggers the hepatic acute phase response, resulting in production of cytokines, prostaglandins (i.e., PGE\textsubscript{2}), and interleukins (i.e., IL-6, IL-8), all of which can affect pregnancy. Elevated levels of these inflammatory markers have been found in the amniotic fluid of women with periodontitis and preterm birth compared with healthy control patients. The management of periodontitis in
pregnancy is based on early diagnosis and deep root scaling. The Randomized control trials (RCTs) demonstrated that deep root scaling reduced the risk of birth before 37 weeks' gestation. In another RCT, deep root scaling combined with patient education, regular plaque removal, and routine chlorhexidine rinses reduce the incidence of preterm low birth weight babies.

Oral Health in Children

Today, millions of children are needlessly afflicted with dental disease, because they cannot obtain timely preventive, educational or treatment services. Poor oral health in children can affect growth and school attendance; can lead to medical complications of untreated disease, and result in poor social outcomes.

Dental Caries

Dental caries is the single most prevalent chronic childhood disease (usually among 5-17 years old)-five times more common than asthma and several times more common than hay fever. While dental decay remains a public health problem, despite the fact that it is totally preventable, loss of dental hard tissues by acid erosion is assuming increasing importance. It is due to the activity of dental bacterial plaque which is a complex biofilm containing various microorganisms that forms mainly on teeth and particularly between them, along the gingival margin, and in fissures and pits, adhering by a variety of mechanisms. Poor diet, specially frequent consumption of sweet foods and drinks, is the main cause of dental decay and tooth erosion. There is an inverse relationship between breast feeding and consumption of sweetened drinks. The use of sweetened drinks rather than milk occurs earlier in infants from low income families. Parents from disadvantaged families have a poor understanding of the effects of constant exposure of teeth from sugared drinks in feeding bottles. Lack of fluoride, frequent snacking and inadequate home care, such as lack of tooth brushing, increase the risk of dental caries in older children.

Prevention

Diet and Lifestyle: Sugars, particularly non-milk sugars in items other than fresh fruits and vegetables, are the major dietary causes of caries. Frequency of intake is more important than the amount. Dietary advice should start with recommending appropriate infant feeding and weaning practice. Drinks other than milk and water should not be given in feeding bottles and should be confined to main meals. Children should be introduced to a cup at about 6 months of age and should have ceased using bottles by about 1 year. Weaning foods should be free of or very low in sugars other than those present in fresh milk and raw fruits or vegetables. For older children and adults, snack foods and drinks especially should be free of sugars. Frequent consumption of carbonated and cola type drinks should be discouraged. Fruit juices can also cause tooth erosion. Saliva buffers may counter plaque acids, and thus chewing sugar-free gum or cheese after meals may be of value.

Fluorides: Fluorides protect against caries by inhibiting mineral loss, promoting remineralization of
decalcified enamel, and reducing formation of plaque acids. Water fluoridation has consistently been shown to be the most effective, safe, and equitable means of preventing caries and can reduce the prevalence of caries by about half. Children aged over 6 months who are at high risk of caries may be given daily fluoride supplements as drops or tablets. However, many toothpastes contain fluoride, which is probably largely responsible for the decline in caries in many countries. Children under about 6 years old may ingest toothpaste, so only a pea sized amount of toothpaste should be used and the brushing supervised in order to reduce the risk of fluorosis (excess fluoride in developing teeth). Fluoride rinses or gels are useful mainly for patients with special needs or those at high risk of caries, such as people with dry mouths.

Fissure Sealants: Plastic coatings placed by a dental professional in the pits and fissures of the permanent teeth can help reduce caries.

Oral Hygiene: Good oral hygiene can prevent periodontal disease and oral malodour (halitosis). The most important means of maintaining oral hygiene is using a tooth-brush: many types are available, and most are effective at removing plaque. Electric brushes may be useful for those with poor manual dexterity. Tooth brushing at least twice daily with a small headed, medium hardness brush will also help reduce caries if a fluoride tooth-paste is used.

So, good oral health care of children is one of the necessary steps to be completely healthy. All communities should be educated on oral health topics such as fluoridation, early childhood caries prevention, maternal oral health and injury prevention.

Conclusion

Oral health is an essential component of health throughout the life. Actually, good oral health is needed not only for overall good health and freedom from the pain and suffering associated with oral disease; but also affects self-esteem, quality of life, and performance at school and at work. As a measure, people should reduce the intake of food and drink containing sugar and avoid frequent consumption of acidic drinks. Tooth brushing with fluoride toothpaste and water fluoridation must be required. Oral examination every year will also minimise the risk of oral disease. Overall good oral health behavior and knowledge will of course keep people healthier for lifetime.

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Anthrax is one of the oldest diseases of grazing animals such as sheep and cattle. The disease description is found in the holy book of Bible, and also mentioned by famous icons like Homer, Virgil and Hippocrates. Anthrax is caused by *Bacillus anthracis* bacteria commonly found in farm animals like sheep, cows and goats. Until the 20th century, anthrax infections killed hundreds and thousands of animals and people each year in Australia, Asia, Africa, North America, and Europe, specifically in the concentration camps during World War II.

In 1881, French scientist Louis Pasteur developed the first effective vaccine for anthrax. Since then although some anthrax outbreak do occur in some animal population it typically does not cause an outbreak on humen due to effective animal vaccination programs, sterilization of raw animal waste materials, and anthrax eradication and disease control policy. Despite this, the disease outbreak is more commonly seen in developing countries due to lack of widespread veterinary or human public health programs.

**Types**

Anthrax is of three types: cutaneous, gastrointestinal and inhalational. Cutaneous anthrax forms spores inside skin when enters the skin through a cut or an abrasion. There are no known cases of cutaneous anthrax spread from person to person. Gastrointestinal tract anthrax is contracted from eating contaminated meat from a dead animal infected by the disease. The most deadly form of exposure occurs from inhalational anthrax.

**Epidemiology**

Between 1979 and 1985, in association with war and the interruption of veterinary public health practices, Zimbabwe was the site of the largest outbreak of anthrax, with about 10,000 cases, almost all of which were cutaneous infection. Between 20,000 and 100,000 cases of anthrax have been estimated to occur worldwide annually, but in the United States, the annual incidence was only 127 in the early 20th century, and is subsequently declined to less than 1 case per year- a rate which is maintained for the past 20 years until 2001 outbreak.

*Bacillus anthracis* has a nearly worldwide distribution existing in the soil in the form of extremely resistant spores and causing infection in humans and in farm and wild animals that have grazed on contaminated land or ingested contaminated feed. Under natural conditions, humans acquire anthrax infection usually the cutaneous form from contact with infected animals or contaminated animal products, such as hides, wool, hair, and ivory tusks. Rarely, gastrointestinal or...
inhalational anthrax has followed the ingestion of poorly cooked infected meat. Cases of inhalational anthrax have been linked to the large scale processing of hides and wool in enclosed factory space, where aerosolized anthrax spores may be inhaled.

**Clinical Features**

*Inhalational Anthrax*: The classic clinical description of inhalational anthrax is that of a biphasic illness. In the initial phase that follows an incubation period of one to six days (may be 60 days or more) it appears as a nonspecific illness characterized by mild fever, malaise, myalgia, nonproductive cough, and some chest or abdominal pain. There are generally no objective findings. The illness progresses to the second phase within 2-3 days. This phase begins abruptly and involves further fever, acute dyspnea, diaphoresis, and cyanosis. Stridor is present in some patients because of extrinsic obstruction of the trachea by enlarged lymph nodes, mediastinal widening, and subcutaneous edema of the chest and neck. The second stage of illness is rapidly progressive, with shock, associated hypothermia, and death occurring within 24-36 hours.

*Cutaneous Anthrax*: More than 95% of naturally occurring anthrax is the cutaneous form. The spore is introduced at the site of a cut or abrasion, usually on the arms, face or neck. The primary lesion— a painless, pruritic papule— appears one to seven days after the introduction of the endospore. Within 1-2 days, small vesicles surround the papule, or a vesicle develops that is 1-2 cm in diameter and is filled with clear or serosanguineous fluid containing leukocytes very rarely and numerous large, Gram-positive bacilli. The vesicle enlarges, and satellite vesicles may develop. A striking, non-pitting, gelatinous edema surrounds the lesion. Low-grade fever and malaise are frequent. The vesicle ruptures, undergoes necrosis, and enlarges, forming an ulcer covered by a characteristic black eschar. The edema may become massive, particularly when the lesions are on the face or neck, and occasionally, multiple bullae develop along with marked toxic effects. Incision or debridement of such early lesions should be avoided, since this may increase the possibility of bacteremia. The eschar dries and falls off in one to two weeks with little ultimate scarring. Regional lymphadenopathy is present initially.

*Gastrointestinal Anthrax*: The symptoms of gastrointestinal anthrax appear two to five days after the ingestion of undercooked meat containing spores. There may be nausea, vomiting, fever, and abdominal pain. The manifestations progress rapidly to severe, bloody diarrhea and signs suggestive of an acute abdomen. The primary intestinal lesions are ulcerative and occur mainly in the terminal ileum or caecum. Gastric ulcers may occur with associated hematemesis. Hemorrhagic mesenteric lymphadenitis is also a feature of gastrointestinal anthrax, and marked ascites may occur. Mortality is greater than 50 percent. The deposition and germination of spores in the oropharynx can produce oropharyngeal anthrax. The symptoms include severe sore throat, fever, dysphagia, and sometimes respiratory distress, which is caused by associated marked lymphadenitis and massive edema. Oral or pharyngeal ulcers covered with a pseudomembrane may be seen.

**Diagnosis**

*Laboratory Diagnosis*: Presumptive identification in a hospital laboratory is based on the direct Gram's-stained smear of a skin lesion, cerebrospinal fluid, or blood showing encapsulated, broad, Gram-positive bacilli. Growth does not occur on MacConkey agar. Confirmatory diagnostic tests are performed in laboratory where the growth of virulents strains on nutrient agar in the presence of 5% carbondioxide.
## Recent Epidemic

### Treatment of Cutaneous Anthrax

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe disease (systemic involvement, extensive edema, lesions of head and neck, age&lt;2 years)</td>
<td>Treatment is the same as that for inhalational anthrax, including intravenous antibiotics and combination therapy</td>
</tr>
<tr>
<td>Localized disease without complications noted above</td>
<td>For adults, ciprofloxacin (500 mg po b.i.d.) or doxycycline (100 mg po b.i.d.); for children, ciprofloxacin (10-15 mg/kg b.i.d.) or doxycycline (for children aged &gt;8 years / &gt;45 kg, 2.2 mg/kg b.i.d.; for those aged ≥8 years / &lt;45 kg, 2.2 mg/kg b.i.d.)</td>
</tr>
<tr>
<td>Alternative treatment</td>
<td>Amoxicillin may be substituted for prolonged treatment course in patients with a contraindication to ciprofloxacin or doxycycline, including children, pregnant women, and lactating women</td>
</tr>
<tr>
<td>Duration of treatment</td>
<td>60 days, 100 days, or 100 days plus 3 doses of AVA</td>
</tr>
</tbody>
</table>

### Treatment of Inhalational Anthrax

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Therapy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antibiotics</strong></td>
<td>Initial therapy</td>
<td>Ciprofloxacin (400 mg iv b.i.d.) or doxycycline (100 mg iv b.i.d.) plus 1-2 additional antibiotics* until the patient is clinically stable</td>
</tr>
<tr>
<td></td>
<td>Prolonged therapy</td>
<td>Ciprofloxacin (600 mg po b.i.d.) or doxycycline (100 mg po b.i.d.) to complete 60 days of treatment, 100 days of treatment or 100 days of treatment plus AVA (3 doses)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Corticosteroids</td>
<td>Meningitis or significant mediastinal edema should be considered</td>
</tr>
<tr>
<td></td>
<td>Drainage</td>
<td>For pleural effusions, usually done with a chest tube</td>
</tr>
<tr>
<td></td>
<td>Supportive care</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Angiotensin-converting enzyme inhibitors, calcium-channel blockers, specific Bacillus anthracis IgG antisera (obtained from vaccines) of B. anthracis vaccine should be considered</td>
</tr>
</tbody>
</table>

AVA: Anthrax Vaccine Absorbed (anthrax vaccine)  
* Additional antibiotics include clindamycin, vancomycin, imipenem, menopenem, chloramphenicol, penicillin, ampicillin, rifampin, and clarithromycin.

### Treatment of Gastrointestinal Anthrax

<table>
<thead>
<tr>
<th>Category</th>
<th>Initial therapy (Oral)</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (including pregnant women and pregnant adolescents)</td>
<td>Ciprofloxacin 400mg IV every 12 hours or Doxycycline 100mg IV every 12 hours and one or two additional antimicrobials*</td>
<td>IV treatment initially, switch to PO when clinically appropriate. Treatment is given for a total of 60 days** (IV &amp; PO combined)</td>
</tr>
<tr>
<td>Children</td>
<td>Ciprofloxacin 10-15 mg/kg every 12 hours (not to exceed 1g/day) or Doxycycline: in case of &gt;8 yrs and &gt;45 kg - 100mg every 12 hours and one or two additional antimicrobials* in case of all other children- 2.2 mg/kg every 12 hours and one or two additional antimicrobials*</td>
<td>IV treatment initially, switch to PO when clinically appropriate. Treatment is given for a total of 60 days** (IV &amp; PO combined)</td>
</tr>
<tr>
<td>Immunocompromised individuals</td>
<td>Same for non-immunocompromised adults and children</td>
<td>Same for non-immunocompromised adults and children</td>
</tr>
</tbody>
</table>

* Additional antimicrobials include rifampin, vancomycin, penicillin, ampicillin, chloramphenicol, imipenem, clindamycin and clarithromycin.

** Previous treatment guidelines for gastrointestinal anthrax suggested 7-10 days of therapy; however with the potential for bioterrorism, 60 days is recommended because of possible inhalational exposure.
RECENT EPIDEMIC

produces heavily encapsulated bacilli that may be visualized with India-ink staining. Additional criteria for the confirmation of the presence of *B. anthracis* include susceptibility to lysis by gamma phage or direct fluorescence-antibody staining of cell-wall polysaccharide antigen.

**Differential Diagnosis:** Other skin lesions that should be considered in the differential diagnosis of cutaneous anthrax include a staphylococcal furuncle or skin infection (usually painful), ecthyma (usually without edema or systemic manifestations), ecthyma gangrenosum (usually in patients with neutropenia and *Pseudomonas aeruginosa* bacteremia), and the bite of a brown recluse spider (causing pain with incipient necrosis). Prominent influenza-like symptoms of recent origin in a patient with a widened mediastinum would suggest a diagnosis of anthrax nowadays, particularly if there were more than one such case. However, tularemia may produce similar acute mediastinal lymphadenopathy.

**Management**

Knowing the fact that anthrax is just a bacterial infection which can be cured with antibiotics like penicillin, doxycycline, and ciprofloxacin is a better way to face the fall-out of the disease. Penicillin has been the drug of choice for anthrax for many decades, and only very rarely has penicillin resistance been found in naturally occurring isolates. *In vitro*, *B. anthracis* is also susceptible to most other commonly used antimicrobial drugs, such as ciprofloxacin, ofloxacin, levofloxacin, tetracyclines, chloramphenicol, macrolides, aminoglycosides, clindamycin, imipenem, rifampin, vancomycin, cefazolin, and other first-generation cephalosporins. It is resistant to cefuroxime, extended-spectrum cephalosporins such as cefotaxime and ceftazidime, aztreonam, trimethoprim and sulfamethoxazole.

The use of dual initial therapy with ciprofloxacin and penicillin may be considered, in view of the frequent and rapid development of complicating meningitis and the clinical experience of cerebrospinal-fluid penetration with high-dose intravenous penicillin. More complete recommendations for special groups such as pregnant women, immunosuppressed patients, and children require further evaluation.

**Post-Exposure Prophylaxis**

Treatment with antimicrobial drugs is not warranted for asymptomatic persons unless public health or law-enforcement authorities have ascertained that there is an evident risk of exposure to a substance documented to be anthrax. Because of the threat of a bioterrorist attack and because a strain of *B. anthracis* has been produced overseas that is resistant to multiple antibiotics (penicillin, doxycycline, chloramphenicol, macrolides, and rifampin), ciprofloxacin is the drug of choice for initial therapy. An attenuated anthrax vaccine adjuvant has been given to members of the armed forces of the United States since 1998. At present the vaccine is not recommended for use by health care workers or the public. In primates, optimal postexposure prophylaxis has been provided by the combination of antibiotic therapy and immunization.

**Conclusion**

Anthrax is a curable disease but can be potentially fatal if not treated promptly. Up to 20% of people who are not properly treated may die due to anthrax related blood infections. Local or state health departments, hospital epidemiologists, and the local or state health laboratory should be notified promptly when anthrax is suspected. Guidelines are available from the Center for Disease Control (CDC) for clinical and laboratory diagnosis, specimen handling, decontamination of equipment, and post-exposure prophylaxis. Unnecessary panic during an outbreak should be minimized by the government and health care authorities. Necessary and practical guidelines along with creation of awareness and education among common population may facilitate the overall situation during an outbreak.

**References**

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3. Wikipedia, the free encyclopedia

Cutaneous anthrax
Subclinical Hypothyroidism Affects Lipid Profile, Cardiovascular Function

Subclinical hypothyroidism has been shown to have an effect on the lipid profile with resulting endothelial and cardiovascular dysfunction, according to findings of the researchers. The aim of the study was to compare the lipid profile of one group of patients with subclinical hypothyroidism to assess the effect on the lipid profile and C-reactive protein [CRP] and resulting outcome on endothelium function, the researchers said. The cross-sectional study looked at 35 patients with subclinical hypothyroid and 103 patients with euthyroid. The control group had no signs of disorders affecting cardiovascular function. All patients enrolled were evaluated for triglycerides, low-density lipoprotein (LDL), high-density lipoprotein (HDL), total thyroxin, thyrotropin (TSH), and CRP. Patients with TSH levels >10 were excluded from the study. Both treatment and control groups were matched for atherosclerotic risk factors. The group of patients displaying subclinical hypothyroidism were found to have significantly lower HDL and higher triglycerides in fasting plasma, and higher CRP levels. Low-density lipoprotein levels did not differ significantly between the two groups. According to the researchers these findings demonstrate that subclinical hypothyroidism significantly affects the cardiovascular function and endothelium function by increasing CRP and lipid profiles. They suggest that selected subjects of subclinical hypothyroid state recover following treatment.

Food and Drug Administration (FDA) Approves Pegloticase for the Treatment of Gout

The United States FDA has approved pegloticase for the treatment of gout in adults who do not respond to or who cannot tolerate conventional therapy. Gout occurs due to an excess of the bodily waste uric acid, which is eventually deposited as needle-like crystals in the joints or in soft tissue. These crystals can cause intermittent swelling, redness, heat, pain and stiffness in the joints. About 3% of the 3 million adults who suffer from gout are not helped by conventional therapy, the researchers said. This new drug offers an important new option for them. Pegloticase is an enzyme that lowers uric acid levels by metabolizing it into a harmless chemical that is excreted in the urine. The drug is administered to patients every 2 weeks as an intravenous infusion. Two 6-month clinical trials comprising a total of 212 patients demonstrated that the drug lowered uric acid levels and reduced deposits of uric acid crystals in joints and soft tissue. Since 1 out of every 4 patients in the clinical trials experienced a severe allergic reaction when receiving an infusion of pegloticase, healthcare providers should dispense a corticosteroid and an antihistamine to their patients beforehand to minimize the risk of such a reaction. Other reactions during the clinical trials included gout flare, nausea, injection site bruising, irritation of the nasal passages, constipation, chest pain, and vomiting. Physicians are also being warned to be cautious about administering pegloticase to patients with congestive heart failure as the drug was not studied in this patient population. Pegloticase is being approved with a Risk Evaluation and Mitigation Strategy that includes a medication guide for patients and materials for healthcare providers to communicate the risk of severe infusion and allergic reactions.

Liquid Nitrogen Most Effective at Removing Warts

Cryotherapy with liquid nitrogen is the most effective method to remove common warts, according to a study. The randomized study looked at 240 participants aged 4 to 79 years from the Netherlands. The patients were assigned to receive cryotherapy with liquid nitrogen every 2 weeks, daily self-application of salicylic acid or a wait-and-see approach. Cure rates (defined as the wart no longer being visible, with skin color and lines re-established) for patients with common warts (mostly located on hands) with cryotherapy were 49%, 15% in the salicylic acid group, and 8% in the wait-and-see group. Despite the fact that cryotherapy caused more frequent and more severe side effects than salicylic acid, patients were most satisfied when treated with cryotherapy, the researchers said. There was no difference in cure rates of plantar warts between the 3 treatment groups. Plantar warts in children had relatively high spontaneous cure rates of 50% but low cure rates of 5% in adolescents and adults. Although earlier evidence favored salicylic acid application over cryotherapy, the present randomized controlled trial is the first that provides evidence to support the use of cryotherapy above salicylic acid, however, for common warts only, the researchers concluded.

Source: http://www.pslgroup.com
Diagnosing Otitis Media: Otoscopy and Cerumen Removal

Otitis media is a general term for middle-ear inflammation and may be classified clinically as either acute otitis media or otitis media with effusion. In both conditions, decreased mobility and opacification of the tympanic membrane are present. In general, acute otitis media is diagnosed when the tympanic membrane is in a neutral position or is retracted. Mastery of otoscopic examination technique is necessary to accurately diagnose otitis media and differentiate the different forms.

Indications

Otoscopic examination is obligatory in children who have an upper respiratory tract infection, who exhibit unaccustomed tugging of the ears, or who have irritability, difficult sleeping, fever, otalgia, otorrhea, or hearing loss.

Equipment

An otoscope with either a surgical or a diagnostic head that has a bright light source and a movable lens is required. Cerumen removal is most readily accomplished with the use of an otoscope that has a surgical head, but a diagnostic head may also be used. Also useful are an appropriately sized blunt ear curette (no smaller than size O) and an applicator with a nonserrated, triangular tip. Metal curettes are preferable to plastic as the rigid and delicate loop on a metal curette allows for finer dissection.

Proper Positioning

Older children and cooperative younger children can be examined in the sitting position, either on a parent's lap or on the examination table. Uncooperative children are best examined while recumbent, in either the prone or the supine position. The head should be firmly immobilized by an assistant. A second assistant, usually the parent, braces the child's body against the examination table. Depending on the child's position, one of the assistants must also firmly hold the child's hands.

Cerumen Removal

With the child immobilized and the child's head secured by an assistant, the dominant hand is used to insert the otoscope into the external auditory canal. Once the otoscope is in the proper position, the nondominant hand is used to hold it in place. Position or partially displace the lens of the otoscope and using the dominant hand blunt ear curette should be carefully inserted through the speculum and into the external auditory canal. Under direct visualization, advancement of the loop of the curette around and behind the bolus or flake of cerumen and scooping it out is done, being careful not to traumatize the wall of the external auditory canal or the tympanic membrane. If small amount of cerumen remain and continue to obstruct the view of the tympanic membrane, the triangular tip of the applicator is tightly wrapped with a wisp of dry or alcohol-soaked cotton to create a dry or wet mop. The applicator is then gently inserted approximately 0.5 cm into the canal and twisted to wipe away the remaining cerumen. This method can also be used to clear otorrhea in children with acute otitis media who have a ruptured tympanic membrane.

The curette or the applicator should not be griped too tightly between the thumb and forefinger; because if the child's head moves despite the assistant's best effort, the instrument should slide between the fingers rather than striking the child's ear canal or tympanic membrane. In older children, irrigation may be preferable, especially if the cerumen is impacted or adherent. A metal ear syringe, or a large plastic syringe connected to butterfly tubing, is filled with lukewarm water and used to flush the external auditory canal. Cold water should be avoided, since it is uncomfortable and may cause nystagmus. Patience and gentleness are essential for successful completion of the procedure.
**Pneumatic Otoscopy**

The position of the tympanic membrane is assessed by visualizing the manubrium and the short process of the malleus. When the tympanic membrane is in the neutral position, the manubrium and the short process are clearly visible. When the tympanic membrane is bulging, the short process is not visible and the tympanic membrane appears convex. When the tympanic membrane is retracted, the manubrium appears foreshortened and the short process becomes prominent. The translucency of the tympanic membrane is assessed. A translucent tympanic membrane has a ground-glass appearance and allows visualization of the underlying middle-ear structures. When middle-ear effusion is present, the tympanic membrane appears opaque and visualization of middle-ear landmarks is impaired.

Next, the color of the tympanic membrane is assessed as this can be affected by underlying middle-ear effusion. An amber color usually indicates the presence of otitis media and effusion. White or yellow discoloration may be seen in both acute otitis media and otitis media with effusion. Areas of intense erythema in the absence of trauma generally indicate underlying acute inflammation. When present along with opacification and bulging of the tympanic membrane, this finding supports the diagnosis of acute otitis media. Finally, after selecting an otoscope the mobility of the tympanic membrane is assessed. The largest speculum that fits comfortably into the external auditory canal should be used. A common mistake is to use a speculum that is too small relative to the diameter of the canal. For very large canals, soft-tipped speculums may be needed. To ensure that there are no leaks in the system, the rubber bulb is squeezed and then the finger if placed firmly on the tip of the speculum. If there are no leaks, the bulb will remain deflated until the finger is removed. In order to assess the mobility, first the otoscope is inserted applying no pressure on the bulb. Then the bulb is depressed gently to generate positive pressure and observe the degree of movement of the tympanic membrane away. To create negative pressure, the otoscope is inserted with the bulb partially depressed. The bulb is then released to observe the degree of movement of the tympanic membrane. Normally it will move briskly in each direction. When middle-ear effusion is present, as in acute otitis media or otitis media with effusion, mobility in each direction is usually decreased or absent.

Proper performance of pneumatic otoscopy is critical to the accurate diagnosis of acute otitis media and otitis media with effusion. In clinical practice to provide optimal care, for children, mastering the techniques is required for accurate determination of the presence or absence of these frequently occurring conditions.

*Source: The New England Journal of Medicine, 2010; 362: 62-64*
Visceral leishmaniasis, also known as Kala-Azar or black fever, was first described in 1903 and was later recognized as the most severe form of leishmaniasis. Infection to human is caused by protozoal parasite of Leishmania species (L. donovani complex, L. chagasi, L. infantum). This is commonly seen in less developed countries with an estimated 500,000 new cases each year. Presently visceral leishmaniasis is endemic in over 60 countries with a total of 200 million people at risk and 41000 recorded deaths in the year 2000. Over 90% of cases of visceral leishmaniasis occur in five countries: India, Bangladesh, Nepal, Sudan and northeastern Brazil. Because of the diversity of epidemiological situations, no single diagnosis, treatment, or control is recommended for all.

**Clinical Features**

Visceral leishmaniasis (VL) is transmitted from an animal reservoir to human by bite of a sand fly of the genus phlebotomus. *Leishmania donovani* is the primary cause of visceral leishmaniasis in the Indian subcontinent. The incubation period is usually 2-4 months. There are 30-100 subclinical infections for every overt case of visceral leishmaniasis. Risk factors for development of clinical disease include malnutrition, immunosuppressive drugs, and especially HIV co-infection.

The cardinal features are fever, usually accompanied by rigor and chills, hepatosplenomegaly and pallor presenting in about 95% of cases. Fever, usually is of sudden onset, high grade, remittent, intermittent or continuous with a double rise in twenty four hours. Typically, most patients present with fever, cough, abdominal pain, diarrhea, epistaxis, splenomegaly, hepatomegaly, cachexia, and pancytopenia. Peripheral lymphadenopathy is common in some foci. In chronic cases, there is anemia, weight loss, and emaciation. Patient may develop intercurrent infections of respiratory and gastrointestinal systems. Blackish discoloration of the skin is a feature of advanced illness, especially on the face, hands and upper torso. In progressive disease, hypoalbuminemia may manifest as pedal edema, ascites and anasarca. As this disease advances, there is profound immunosuppression, and secondary infections are very common which include tuberculosis, pneumonia, severe amoebic or bacillary dysentery, gastroenteritis, herpes zoster and chicken pox. Skin infections like boils, cellulitis and scabies are common occurrences.

**Diagnosis**

Diagnosis and treatment follow-up of visceral leishmaniasis pose a challenge to physicians working in endemic areas. The physician needs to have a high suspicion of visceral leishmaniasis in patients presenting with fever and organomegaly, usually of long standing, with no response to the conventional treatment. There may also be worsening of symptoms with mostly negative laboratory investigations, or anemia and pancytopenia which is gradually worsening from an endemic area.

Classically, the diagnosis of visceral leishmaniasis is confirmed by demonstration of the parasite. Intracellular leishmania can be identified or cultured from aspirates of spleen, bone marrow, lymph node, or liver. The diagnostic yield is highest, about 98%, for spleen aspirates, which have been used for routine diagnosis in the field. Serodiagnosis, by ELISA or immunofluorescence antibody test, is employed in
developed countries. Direct agglutination (DAT) is easy to use in the field, and cost effective, but there is no commercial source of antigen and results are not always reproducible. Testing with a commercially available immunochromatographic strip that uses recombinant leishmania antigen K39 has proved and become popular. Polymerase Chain Reaction (PCR) or DNA detection from the peripheral blood is an efficient method for diagnosis, but is only performed in specialized laboratories.

**Management**

Conditional on correct diagnosis and treatment, current drug regimens for visceral leishmaniasis will only prevent about 90% of death. The treatment consists of pentavalent antimony compounds, amphotericin B, pentamidine, allupurinol, stibogluconate with paromomycin or interferon gamma (INF-γ), miltefosine, and amphotericine B deoxycholate. The two pentavalent antimony compounds, sodium stibogluconate and meglumine antimoniate were first introduced in the 1940’s and have since been used first-line chemotherapeutic agents against all forms of leishmaniasis including visceral leishmaniasis.

The drugs are administered parenterally and are the safest currently available since they are rapidly excreted by the kidneys and there is virtually no accumulation in the body. Potential side effects include nausea, vomiting, diarrhea, ECG changes and convulsions. Antimony resistant *Leishmania donovani* strains may be the cause of treatment failure. One of the methods employed is the use of INF-γ to treat visceral leishmaniasis.

**Prevention and Control**

The current possibilities for visceral leishmaniasis control are limited. Different geographical regions have different ecological characteristics, with many species of sandflies as potential vectors and some 100 species of animals as potential reservoir hosts. Control strategies are tailored to the two main epidemiological entities: anthroponotic, when human beings are the sole reservoir, and zoonotic, when dogs are the major source of infection for the vector. In either situation, efficient case management based on early diagnosis and treatment is the key to limit morbidity and prevent mortality.

Effective treatment of patients is also a measure to control reservoir and transmission in anthroponotic foci, particularly for cases of dermal leishmaniasis after Kala-Azar, which are thought to act as a long term reservoir of the disease. In addition, vector control should be implemented wherever feasible. Used together, the two strategies have been shown to control visceral leishmaniasis in India. Spraying of houses with residual insecticides has been an important measure in the past in India but is not much used now. Insecticides used in malaria control programs are effective on leishmania vectors. Dichloro Diphenyl Trichloroethane (DDT), being cheap, is the main insecticide used in less developed countries, but the sandfly vector in India, *Phlebotomus argentipes*, is becoming resistant. In endemic areas with zoonotic transmission, infected or stray dogs should be destroyed.
To set up an effective control strategy for visceral leishmaniasis is a challenge in endemic areas, which are largely in the poorest countries of the world, in remote places, or complex settings. However, personal protection may be possible. In foci where sandflies bite at night, impregnated mosquito-net have decreased the incidence of leishmaniasis. Insecticide incorporated into the polyethylene fibre of mosquito-net might limit the need for reimpregnation. Vaccines are being investigated for both cutaneous and visceral leishmaniasis, but none is yet ready for use.

**Post-Kala-Azar Dermal Leishmaniasis (PKDL)**

The PKDL are dermatological manifestations which are seen as macules, papules, nodules (most frequently) and plaques which have a predilection for the face, especially the area around the chin. The face often appears erythematous. Hypopigmented macules can occur over all parts of the body and are highly variable in extent and location. There are no systematic symptoms and no spontaneous healing. The diagnosis is clinical, supported by demonstration of scanty parasites in lesions by slit skin smear and culture. Immunofluorescence and immunohistochemistry are other methods for demonstration of the parasite in the skin tissues. In the majority of the patients, serological tests (direct agglutination test or k39 strip tests) are positive.

Treatment of PKDL is difficult. Antimony for 120 days or several courses of amphotericin B infusion are required. In the absence of a physical handicap, most patients are reluctant to complete the treatment. Spontaneous healing occurs in about three-quarters of cases within 1 year. In patients with persistent PKDL, treatment with antimony for 2 months is considered adequate.

**Conclusion**

Visceral leishmaniasis is a treatable disease but may show a fatal outcome due to lack of accurate diagnosis and early management. As visceral leishmaniasis is very common in South-Asia and some other specific underdeveloped nations, the physicians should focus with high index when confronted with a case of pyrexia, anemia, leucopenia and unexplained organomegaly. The increasing proportion of patients refractory to stibogluconate as well as the increased toxicity of antimonials underline the necessity and urgency of further research on vaccine development and better drug courses. If the ultimate aim of drug development is to achieve better disease control, it should take into account the epidemiological and economic context of the endemic areas, as well as the features of the local health service organization.

**References**

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Cardiac arrest occurs in about once in every 30,000 late pregnancies, but survival from such an event is exceptional. Most deaths are from acute causes, with many mothers receiving some form of resuscitation. Factors peculiar to pregnancy that weigh the balance against survival include anatomical changes that make it difficult to maintain a clear airway and perform intubation, pathological changes such as laryngeal edema, physiological factors such as increased oxygen consumption, and an increased likelihood of pulmonary aspiration. In the third trimester, the most important factor is compression of the inferior vena cava and impairment of venous return by the gravid uterus when the woman lies supine. These difficulties may be exaggerated by obesity. This is a medical emergency threatening the life of both mother and the fetus where a speedy response is essential. Therefore those directly or indirectly concerned with obstetric care needs proper guideline and training on resuscitation. A professional hand along with necessary equipment, drugs and well trained staff can save the precious lives of the mother and her unborn child from this life threatening situation.

**Basic Life Support (BLS)**

*Airway:* A clear airway must be quickly established with the head tilt-jaw thrust or head tilt-chin lift manoeuvre and then maintained. Suction should be used to aspirate vomit. Badly fitting dentures and other foreign bodies should be removed from the mouth, and an airway should be inserted. These procedures should be performed with the patient inclined laterally or supine and the uterus displaced as described below.

*Breathing:* If the patient is not breathing adequately, intermittent positive pressure ventilation should be started once the airway has been cleared. Mouth to mouth, mouth to nose, or mouth to airway ventilation should be carried out until a self inflating bag and mask are available. Ventilation should then be continued with 100% oxygen and a reservoir bag. Because of the increased risk of regurgitation and pulmonary aspiration of gastric contents in late pregnancy, cricoid pressure should be applied until the airway has been protected by a cuffed tracheal tube. Ventilation is made more difficult by the increased oxygen requirement and reduced chest compliance in pregnancy. The reduced compliance is due to rib flaring and splinting of the diaphragm by the abdominal contents. Observing the rise and fall of the chest in pregnant patients is also more difficult.
Circulation: Circulatory arrest is diagnosed by the absence of a palpable pulse in a large artery (carotid or femoral). Chest compressions are given at the standard rate and ratio of 15:2. Chest compression on pregnant women is made difficult by flared ribs, raised diaphragm, obesity, and breast hypertrophy. Because the diaphragm is pushed upwards by the abdominal contents, the hand position for chest compressions should similarly be moved up the sternum, although currently no guidelines suggest exactly how far. In the supine position an additional factor is compression of the inferior vena cava by the gravid uterus, which impairs venous return and reduces cardiac output; all attempts at resuscitation will be futile unless the compression is relieved. This is achieved either by placing the patient in an inclined lateral position by using a wedge or by displacing the uterus manually. Raising the patient's legs will improve venous return.

Advanced Life Support

Intubation: Tracheal intubation should be carried out as soon as facilities and skill are available. Difficulty in tracheal intubation is more common in pregnant women, and specialized equipment for advanced airway management may be required. A short obese neck and full breasts during pregnancy may create further difficulty in inserting the laryngoscope into the mouth. The use of a short handled laryngoscope or one with its blade mounted at more than 90° (polio or adjustable blade) or demounting the blade from the handle during insertion into the mouth is helpful. Mouth to mouth or bag and mask ventilation is best done without pillows under the head and with the head and neck fully extended. The position for intubation, however, requires at least one pillow to flex the neck and extend the head. Any pillow removed to facilitate initial ventilation must, therefore, be kept at hand for intubation. In the event of failure to intubate the trachea or ventilate the patient's lungs with a bag and mask, insertion of a laryngeal mask airway should be attempted. Cricoid pressure must be temporarily removed in order to place the laryngeal mask airway successfully. Once the airway is in place, cricoid pressure should be re-applied.

Defibrillation and drugs: Defibrillation and drug administration is in accordance with advanced life support recommendations. On a practical note, it is difficult to apply an apical defibrillator paddle with the patient inclined laterally, and great care must be taken to ensure that the dependent breast does not come into contact with the hand holding the paddle. Adhesive electrodes are used for such conditions. Increasingly, magnesium sulphate is used to treat and prevent eclampsia. If a high serum magnesium concentration has contributed to the cardiac arrest, calcium chloride should be considered. Tachyarrhythmias due to toxicity of the anesthetic drug bupivacaine are probably best treated by electrical cardioversion or with bretylium rather than lignocaine.
EMERGENCY MEDICINE

Specific Difficulties in Pregnant Patients

<table>
<thead>
<tr>
<th>Airway</th>
<th>Patient needs to be inclined laterally for:</th>
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<tbody>
<tr>
<td></td>
<td>Suction or aspiration</td>
</tr>
<tr>
<td></td>
<td>Removing dentures or foreign bodies</td>
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<tr>
<td></td>
<td>Inserting airways</td>
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<table>
<thead>
<tr>
<th>Breathing</th>
<th>Greater oxygen requirement</th>
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<tbody>
<tr>
<td></td>
<td>Reduced chest compliance</td>
</tr>
<tr>
<td></td>
<td>More difficult to see rise and fall of chest</td>
</tr>
<tr>
<td></td>
<td>More risk of regurgitation and aspiration</td>
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<table>
<thead>
<tr>
<th>Circulation</th>
<th>External chest compression difficult because:</th>
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<tbody>
<tr>
<td></td>
<td>Ribs flared</td>
</tr>
<tr>
<td></td>
<td>Diaphragm raised</td>
</tr>
<tr>
<td></td>
<td>Patient obese</td>
</tr>
<tr>
<td></td>
<td>Breasts hypertrophied</td>
</tr>
<tr>
<td></td>
<td>Supine position causes inferior vena cava compression by the gravid uterus</td>
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</tbody>
</table>

Caesarean section: Caesarean section may play an important part in the resuscitation of the mother while at the same time saving the life of the fetus. Many successful resuscitations have occurred after prompt surgical intervention. The probable mechanism for a favorable outcome is that the occlusion of the inferior vena cava is relieved completely by emptying the uterus, whereas it is only partially relieved by manual uterine displacement or an inclined position. Delivery also improves thoracic compliance, which will improve the efficacy of chest compressions and the ability to ventilate the lungs. Although evidence shows that the fetus can tolerate prolonged periods of hypoxia, the outlook for the neonate is optimized by immediate Caesarean section.

If maternal cardiac arrest occurs in the labor ward, operating theatre, or accident and emergency department, and basic and advanced life support are not successful within five minutes, the uterus should be emptied by surgical intervention. Time passes very quickly in such a high pressure situation, and it is advisable to practice this scenario, particularly in the accident and emergency department. Cardiopulmonary resuscitation must be continued throughout the operation and afterwards because this improves the prognosis for mother and child. If necessary, transabdominal open cardiac massage can be performed. After successful delivery both mother and infant should be transferred to their appropriate intensive care units as soon as clinical conditions permit. The key factor for successful resuscitation in late pregnancy is that all midwifery, nursing, and medical staff concerned with obstetric care should be trained in cardiopulmonary resuscitation. Regular short periods of practice for retention of cardiopulmonary resuscitation are therefore essential. The training of ambulance staff is particularly important as paramedics are likely to be the primary responders to community obstetric emergency calls.

Source: British Medical Journal, 2003; 327: 1277-1279

Dear Doctor,
Greetings!!!

We have been publishing quarterly Medical Newsletter for more than twenty years and it gives us immense pleasure to share the views and knowledge of modern Medical Science with you. However, some time unfortunately due to different circumstances any change in the address or designation of doctors’ does not come to our information access. As a result our postage fails to reach the desired person. We have already started to update our doctor’s database. Therefore, we request you kindly to send us information about your updated mailing address and recent designation along with your email address if possible, so that we can be in touch with you all the time.

Thank you for your support and cooperation.

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Senior Manager
Medical Department
Beximco Pharmaceuticals Ltd.