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INFO MEDICUS

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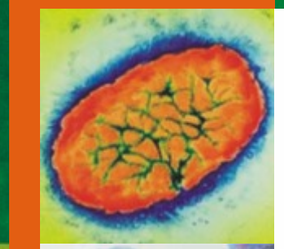
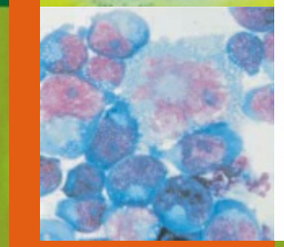
Acute Respiratory Infections in Children





INFO MEDICUS

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January-March 2011 Volume 8 Issue 1

Dear Doctor,

Happy New Year!

As we say good bye to 2010 and welcome in 2011, we would like to take this opportunity and means to express our sincere appreciation and gratitude for being us all through our journey and giving us your valuable support for the last seven years.

The Review Article we have selected this time is Acute Respiratory Infections (ARI) in Children. ARI is recognized as a leading cause of mortality in children less than five years of age worldwide. In this article we incorporated the diseases which is related the upper and lower respiratory infections. We hope this article will make for useful reading.

Systemic Lupus Erythematosus (SLE) is a chronic, usually life-long, potentially fatal autoimmune disease characterized by unpredictable exacerbations and remissions with variable clinical manifestations. We summarize the management of SLE in section Clinician's Corner with a view that it will be beneficial in clinical practice.

In "Case Review" we have focused an interesting case of a live intra abdominal pregnancy. Abdominal pregnancies are those in which implantation occurs within the peritoneal cavity excluding tubal, ovarian or intraligamentous sites of implantation. Such pregnancies are potentially life threatening with maternal mortality 7.7 times higher than that associated with intrauterine pregnancy. We hope you will like this case.

Arthrocentesis of the knee is emphasis in Clinical Method and other regular features are as usual. We hope you will enjoy this issue. We need your suggestions to serve you better. Please keep your comments coming.

Thanks and best regards
ACI Pharmaceuticals

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Acute respiratory infections in children

Acute respiratory infections (ARI) are the leading cause of mortality in children under five years of age worldwide. Over the period 2000 to 2003 it is estimated that each year there are 10.6 million deaths in children fewer than five years. Acute respiratory infections are classified as upper respiratory tract infections or lower respiratory tract infections. The upper respiratory tract consists of the airways from the nostrils to the vocal cords in the larynx, including the paranasal sinuses and the middle ear. The lower respiratory tract covers the continuation of the airways from the trachea and bronchi to the bronchioles and the alveoli. ARIs are not confined to the respiratory tract and have systemic effects because of possible extension of infection or microbial toxins, inflammation and reduced lung function. Diphtheria, pertussis (whooping cough) and measles are vaccine-preventable diseases that may have a respiratory tract component but also affect other systems.

Pathogenesis

The high incidence of acute respiratory infections in young infants and preschool children is explained by increased exposure to respiratory pathogens by siblings and in child care; environmental factors; defects in the immune system.

Crowded conditions, such as those found in day-care settings, favour the colonisation and spread of pathogens causing acute respiratory infections. Well documented environmental risk factors include passive smoking, exposure to pollutants and absence of breast-feeding. Familial predisposition is a risk factor for recurrent and severe disease. This genetic predisposition seems associated with anatomical, physiological and/or immunological features. Defects in the immune systems are well known to be linked with frequent respiratory infections. It has been shown that 57% of children with recurrent respiratory infections (at least three episodes a year during at least 2yrs) were deficient in one of the IgG subclasses and that 17% were IgA deficient. IgG subclass deficiency is quite prominent in young children but rare in older children, suggesting a transient immaturity of the immune system as one of the possible pathogenic factors. Defects in the immune system, such as common variable immunodeficiency and the more frequent selective IgA deficiency are known to be linked with frequent RTIs caused by bacteria and viruses.

Pathogens causing acute respiratory infections

Viruses	Bacteria	Other
RNA Viruses	*Streptococcus pneumonia*	*Pneumocystis jiroveci*
Coronaviruses	*Haemophilus influenza*	*Plasmodium*
Enteroviruses†	*Staphylococcus aureus*	
falciparum†	*Moraxella catarrhalis*	
Human metapneumovirus	*Bordetella pertussis*	
Influenza virus A, B, C	*Mycobacterium tuberculosis**	
Measles	*Mycoplasma pneumonia*	
Parainfluenza virus	*Chlamydia trachomatis*	
Respiratory syncytial virus	*Chlamydophilia pneumonia*	
Rhinoviruses	*Chlamydophila psittaci†*	
DNA Viruses	*Coxiella burnetti†*	
Adenovirus	*Legionella pneumophila†*	
Bocavirus	*Klebsiella pneumoniae†*	
Cytomegalovirus*	*Non-typhoidal salmonellae*	
Herpes simplex virus*†		
Torquetenovirus		

† rare cause; * particular in HIV infections

Predisposing factors

Although bacteria and viruses are the immediate causes of most acute respiratory infections, malnutrition, air pollution, smoking and overcrowding are the underlying drivers of vulnerability.

Malnutrition

- Exclusive breastfeeding before six months
- Breastfeeding and complementary foods until age two
- Access to appropriate nutritional supplements
- Commitment from governments and the international community to combat malnutrition

Air Pollution

- Wider access to cleaner fuels for cooking and heating
- Support and education to help people change their cooking habits
- More research into the relationship between indoor air pollution and health
- Motor vehicle and industrial emission controls
- Improved public transportation systems to reduce motor vehicle use

Tobacco

- Raise tobacco prices
- Enforce no-smoking policies
- Provide education about the harms of smoking and secondhand smoke
- Ban all forms of tobacco advertising and marketing
- Expand the use of health warnings on cigarettes

Overcrowding

- Improve urban infrastructure and foster economic development
- Build housing that meets standards for ventilation and density
- Promote community input on opportunities for improving living conditions

Classification

Acute upper respiratory infections	Acute lower respiratory infections
Nasopharyngitis	Laryngotracheobronchitis (croup)*
Pharyngotonsillitis	Bronchitis
Otitis media	Bronchiolitis
Epiglottitis	Pneumonia
Laryngotracheobronchitis (croup)*	Influenza*
Influenza*	Pertussis**

*Croup and influenza involve both upper and lower airways
**Pertussis starts as a coryzal illness, but the main recognisable clinical feature of cough is lower airway in origin

Classification

Nasopharyngitis

Nasopharyngitis, a viral infection of the nose and throat is the most common upper respiratory infections caused primarily by rhinoviruses and coronaviruses. There is currently no known treatment that shortens the duration; however, symptoms usually resolve spontaneously in 7 to 10 days, with some symptoms possibly lasting for up to three weeks.

Signs and symptoms: In general, the sign and symptoms are sore throat, runny nose, nasal congestion, sneezing, sometimes accompanied by pink eye, muscle aches, fatigue, malaise, headaches, muscle weakness, uncontrollable shivering, loss of appetite.

Treatment: There are no antiviral drugs approved to treat or cure the infection; all medications used are palliative and treat symptoms only. Alternative treatments such as vitamin C, Echinacea and zinc have been proposed but none of them have been shown to decrease the duration of the illness. Plenty of drinking fluids and adequate rest to maintain hydration, gargling with warm salt water, using cough drops, throat sprays, over the counter pain or cold medicines. Saline nasal drops may help alleviate congestion.

Pharyngotonsillitis

Pharyngotonsillitis is a common illness in adults and children, an infection in the pharynx, which is served by the lymphoid tissues of Waldeyer's ring can spread to other parts of the ring, such as the tonsils, nasopharynx, uvula, soft palate, adenoids and cervical lymph glands, causing pharyngitis, tonsillitis, pharyngotonsillitis, or nasopharyngitis. These illnesses can be acute, subacute, chronic or recurrent.

Signs and symptoms: In general, the onset of pharyngotonsilitis is sudden and characterized by symptoms of fever and sore throat, nausea, vomiting, headache and rarely abdominal pain. Physical examination at presentation reveals erythema of the throat and tonsils and enlarged cervical glands. There may also note an exudate or a membrane covering the tonsils in addition to palatal petechiae, follicles, cervical adenitis and scarlet fever rash, depending on the causative agent; none of these findings is specific. The classical symptoms of viral infections namely cough, rhinitis, conjunctivitis and diarrhea, are usually absent in bacterial pharyngotonsilitis. A history of exposure to the organism and presentation in winter are contributory.

Treatment: The treatment of choice is phenoxymethylpenicillin for ten days. Shorter courses carry the risk of recurrence. In penicillin allergy, treatment with a cephalosporin for 10 days (provided there is no history of type 1 allergy); clindamycin or a macrolide (preferably erythromycin) is recommended.

Otitis media

Acute otitis media is generally defined as an acute, transient and clinically verified inflammation of the middle ear. The infection often affects both ears. The symptom pattern and clinical findings may vary, depending on the bacterial etiology.

Signs and symptoms: Otitis usually presents with sudden earache, often in association with an upper respiratory tract infection. Discharge from the ear may occur and is a sign that the eardrum has perforated. During the first few days, earache, fever, malaise, irritability and insomnia are common. On Physical examination the classic description for otitis media is an erythematic, opaque, bulging tympanic membrane with loss of anatomic landmarks including a dull/absent light reflex. Pneumatic otoscopy shows decreased tympanic membrane mobility.

Treatment: Greater than 60% will resolve spontaneously within 10 days but there is no clinical means to distinguish those that need to be treated. In patients older than 6 months without severe symptoms, observation for 48 to 72 hours is an option. Relief of pain symptoms should be instituted. If symptoms are not better, antibiotics should be started. Amoxicillin is still the first drug of choice and the initial dosage should be 80 to 90 mg/kg/day. If the child is not clinically improved on antibiotics within 48 to 72, alternative treatment should be effective against drug resistant Streptococcal pneumonia and beta-lactamase producing organisms. This would include amoxicillin-clavulanate, cefuroxime, cefpodoxime, cefuxime or intramuscular ceftriaxone.

Epiglottitis

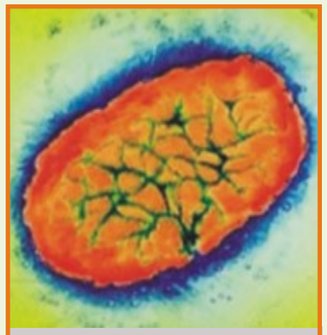
Epiglottitis, also termed supraglottitis, is an inflammation of the epiglottis and/or the supraglottic tissues surrounding the epiglottis, including the aryepiglottic folds, arytenoid soft tissue and occasionally, the uvula. Conditions that cause epiglottitis include infectious, chemical and traumatic agents.

Sign & symptoms: Typically, a child who comes to the hospital with epiglottitis has a history of fever, difficulty talking, irritability and problems swallowing for several hours. The child often sits forward and drools. In infants younger than 1 year, signs and symptoms such as fever, drooling and upright posturing may all be absent. In this small population group, the infant may have a cough and a history of an upper respiratory infection. Thus it is very difficult to know if an infant has epiglottitis. Signs of respiratory distress or trouble breathing are seen with epiglottitis as drooling, leaning forward to breathe, taking rapid shallow breaths, pulling in of muscles in the neck or between the ribs with breathing (retractions), high-pitched whistling sound when breathing (stridor) and trouble speaking.

Treatment: Currently, immediate hospitalization is required whenever the diagnosis of epiglottitis is suspected. The person is in danger of sudden and unpredictable closing of the airway. Initial treatment of epiglottitis may consist of making the person as comfortable as possible including placing an ill child in a dimly lit room with the parent holding the child, humidified oxygen and close monitoring. If there are no signs of respiratory distress, intravenous fluids may be helpful. In addition, patients should be given antibiotic such as second or third generation cephalosporins (either alone or in combination with penicillin or ampicillin for streptococcal coverage).

Pertussis

Pertussis, also known as whooping cough is a highly contagious disease caused by the bacterium Bordetella pertussis. It is known to last for duration of approximately 6 weeks before subsiding. The disease derives its name from the "whoop" sound made from the inspiration of air after a cough.



Bordetella pertussis

Signs and symptoms: The characteristic symptoms of whooping cough are paroxysms of cough followed by an inspiratory whoop and/or vomiting. These symptoms are usually preceded by a catarrhal phase lasting a week or two that resembles the common cold, with coryza and a non productive cough. The paroxysmal phase lasts for several weeks, usually reaching its peak of severity in the first two weeks before gradually improving over the next 6 to12 weeks. Young infants do not always have the characteristic whoop and can present with apnoea even before the cough is recognised. Infants with pertussis may look well between paroxysms, without chest signs. Petechial and/or subconjunctival haemorrages may be evidence of the severity of the coughing paroxysms. Young infants are at greatest risk of complications including encephalopathy, pneumonia and feeding problems.

Treatment of pertussis

Antibiotic	Dose	Duration
Erythromycin	40-50 mg/kg/day PO, in 4 divided doses (maximum 2 g/day)	14 days
Azithromycin	10-12 mg/kg/day PO, in 1 dose (maximum 500 mg/day)	5 days
Clarithromycin	15-20 mg/kg/day PO, in 2 divided doses (maximum 1 g/day for 7 days)	7 days
Trimethoprim-Sulfamethoxazole	8mg Trimethoprim+40 mg Sulfamethoxazole /kg/day PO, in 2 divided doses	14 days

Laryngotracheobronchitis

Laryngotracheobronchitis is caused by a viral infection of the upper airway. This infection results in a classic triad of hoarse voice, barking cough and inspiratory stridor. The condition usually affects children from six months to six years of age.

Signs and symptoms: Laryngo-tracheobronchitis normally starts with the typical barking cough, which often comes on suddenly during the night. Usually this is preceded by a 1 to 2-day history of non-specific symptoms of a viral URTI, such as rhinorrhoea, sore throat and fever. Stridor may develop, which can be associated with difficulty breathing. In more severe cases the child may have evidence of respiratory distress with tachypnoea, tracheal tug and chest wall retractions. Auscultation usually reveals a clear chest, although air entry may be reduced in more severe cases. Symptoms tend to be worse at night and may fluctuate in severity, typically becoming more severe if the child becomes upset. Laryngotracheobronchitis typically lasts for 2 to 3 days, but the cough can persist for up to two weeks, typically becoming looser in nature after the first few days.

Treatment: Make the child as comfortable as possible. Avoid agitating the child with unnecessary procedures and examinations. Humidified air or mist therapy may be used, but both have unproven efficacy. Provide oxygen (humidified) to all hypoxic patients. L-epinephrine (1:1000) is as effective as racemic epinephrine. Epinephrine therapy does not indicate the need for admission. Dexamethasone (0.6 mg/kg intramuscular, not to exceed 10 mg) has been shown to reduce symptoms in patients with moderate to severe croup. Nebulized budesonide 2 mg has been shown in several studies to be equivalent to oral dexamethasone. Inhaled Decadron is also used when budesonide is unavailable.

Assessing clinical severity of a child

- Mild: barking cough, no or intermittent stridor, no chest retractions
- Moderate: persisting stridor at rest, some chest wall recession or tracheal tug, child easily pacified and interested in surroundings
- Severe: persisting stridor at rest, marked tracheal tug and chest wall recession, lethargic or restless, pulsus paradoxis

Bronchitis

Inflammation of the mucous membranes of the bronchial airways is caused by irritation or infection or both pathogens. Acute bronchitis is rarely bacterial in otherwise healthy children. Generally the clinical course is self limiting, with complete healing and full return to function typically seen within 10 to 14 days after symptom onset. Recurrent episodes of acute or chronic bronchitis are unusual and should prompt consideration of alternative diagnoses such as asthma or suppurative lung disease (cystic fibrosis, immunodeficiency, ciliary dyskinesia).

Signs and symptoms: Acute bronchitis usually begins with symptoms similar to those of the common cold, such as coryza, malaise, chills and low grade fever, sore throat and back and muscle pain. The initial watery nasal discharge becomes thicker and discoloured after several days and is accompanied by a cough. Purulent nasal discharge is common with viral respiratory pathogens and by itself, does not imply an underlying bacterial infection. The cough is initially dry and harsh but then loosens and becomes productive. Children younger than five years rarely pectorate and sputum may be seen in vomitus. Parents frequently note a rattling sound in the chest. Examination findings are frequently normal although the pharynx may be injected. Auscultation typically reveals clear lung fields, although scattered crackles or wheezing can sometimes be heard.

Treatment: When no secondary infection is present, acute bronchitis is treated in the same way as the common cold. Home care includes drinking plenty of fluids, resting, increasing moisture in the air with a cool mist humidifier, paracetamol and ibuprofen or other anti-inflammatory drugs can be taken for fever and pain. Cough suppressants are used only when the cough is dry and produces no sputum. If the patient is coughing up, the cough should be allowed to continue. If a secondary bacterial infection is present, the infection is treated with an antibiotic.

Bronchiolitis

Bronchiolitis is the most common cause of acute lower respiratory infection in children during the first year of life. The peak incidence of bronchiolitis occurs in infants aged 2 to 6 months, with more than 80% of cases occurring in babies under 12 months of age. The most common infectious agent responsible for bronchiolitis is respiratory syncitial virus. Respiratory syncitial virus infections are most common in winter and spring in temperate climates. Spread of respiratory syncitial virus occurs via large droplets transferred to the individual's hands, where the virus can survive for up to one hour. The virus is then transferred to the eyes or nose, resulting in infection. The clinical diagnosis is usually confirmed by identifying respiratory syncitial virus, or another respiratory virus, in a respiratory sample (usually nasopharyngeal aspirate). Immunofluorescent (IF) antibody methods allow rapid identification of the virus responsible and enable infants with the virus to be isolated, this is important for infection control. Chest X-rays are not usually helpful for diagnosing bronchiolitis.

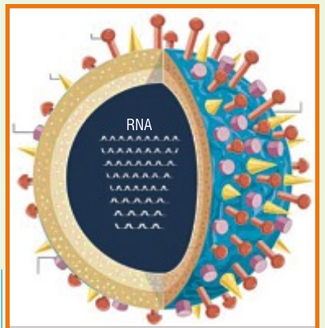
Clinical feature

- Poor feeding (fluid intake <50% of normal in the preceding 24 hours, poor urine output)
- Lethargy
- Apnoea
- Respiratory rate > 70 bpm
- Nasal flaring or grunting
- Severe chest wall recession
- Cyanosis
- Oxygen saturation <92%

Signs and symptoms: Bronchiolitis presents most frequently in infants aged 3 to 6 months, with breathing difficulties, cough (may be dry/irritating or moist), poor feeding and fever. In very young babies (typically those under 1-2 months), the only symptom may be apnoea.

Treatment: Bronchiolitis will generally run its course without special treatment. Antibiotics will not affect bronchiolitis because bronchiolitis is caused by respiratory syncitial virus and other viruses. Running a humidifier or a cool mist vaporizer in the room in which child sleeps can help break up the mucous in the nose and chest from bronchiolitis. For removing congestion from the nose, saline drops and a suction bulb can be used. Acetaminophen or ibuprofen can be given for fever.

Influenza



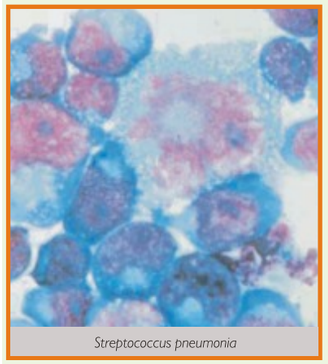
Influenza virus

Influenza is a highly infectious respiratory disease caused by the influenza viruses. Three subtypes cause disease in humans influenza A, B and C but only the first two cause clinically significant disease. Complications of influenza can occur in patients with preexisting respiratory disease, but infection can also result in secondary bacterial pneumonia, cause febrile convulsions and be associated with encephalopathy, transverse myelitis, myocarditis and myositis in previously healthy children.

Signs and symptoms: Uncomplicated influenza results in respiratory symptoms including dry cough, sore throat, rhinitis and otitis media, accompanied by systemic symptoms including fever, myalgia, headache, malaise, fatigue, nausea and vomiting. These symptoms are typically of acute onset but can be difficult to differentiate from other respiratory infections such as respiratory syncitial virus. Influenza usually lasts for up to a week, although the cough and malaise can persist for 2 to 3 weeks in some individuals.

Treatment: There was no specific treatment for influenza and for most people it is still best to treat the symptoms in the old fashioned way. For symptomatic relief, paracetamol and ibuprofen or other anti-inflammatory drugs can be taken. Decongestants, cough medicines, gargles, lozenges etc. can also be used. Antiviral medicines (amantadine, rimantadine, zanamivir and oseltamivir) can be taken to reduce the severity and duration of symptoms caused by infection with influenza A or B virus, shorten the length of the illness, control outbreaks of the flu in nursing homes, reduce the spread of the virus to people at high risk for severe complications of the flu (high risk groups).

Pneumonia



Streptococcus pneumonia

Pneumonia can be defined as inflammation and consolidation of the lung parenchyma, caused by an infectious organism. Most cases of pneumonia in children are community acquired and occur in previously healthy children. The diagnosis is clinical and does not require chest X-ray confirmation.

Treatment of pneumonia

Illness	Medications	Dosage and duration
Nonsevere pneumonia at the community level	Oral amoxicillin (15 mg/kg)	3 doses/day for 3 days
	Acetaminophen (100 mg)	6 doses
Nonsevere pneumonia at the facility level	Oral amoxicillin (15 mg/kg)	3 doses/day for 3 days
	Acetaminophen (100 mg)	6 doses
	Oral salbutamol (2 mg)	3 doses/day for 4 days
Severe pneumonia at the hospital level	Oral amoxicillin (15 mg/kg)	3 doses/day for 5 days
	Nebulized salbutamol (2.5 mg)	6 doses/day for 4 days
	Injectable ampicillin (50 mg/kg)	4 doses/day for 3 days
Very severe pneumonia at the hospital level	Oral amoxicillin (15 mg/kg)	3 doses/day for 5 days
	Nebulized salbutamol (2.5 mg)	6 doses/day for 4 days
	Injectable ampicillin (50 mg/kg)	4 doses/day for 5 days
	Injectable gentamicin (2.5 mg/kg)	1 dose/day for 10 days
	Oral prednisolone (1 mg/kg)	1 dose/day for 3 days

Signs and symptoms: Pneumonia frequently starts with a high fever accompanied by tachypnoea. Cough is often absent initially, particularly when the infection is due to Streptococcus pneumoniae. Respiratory rate can be hard to count in healthy restless children. Chest recession may be an accompanying clinical feature. Auscultation typically reveals crackles and/or bronchial breathing. The classic mycoplasma prodrome is high fever and headache before the cough appears. Children with pneumonia may present with abdominal pain, particularly if the infection involves the lower lobes. The pain can be quite severe and is due to referred pain from the diaphragmatic pleura. Older children may also complain of chest pain.

WHO Guidelines for assessment and management of ALRI

Disease Severity	Clinical Features
Mild	▪ blocked or runny nose with cough ▪ no tachypnoea (<50bpm) ▪ no chest indrawing ▪ sore throat ▪ ear discharge
Moderate	▪ cough ▪ tachypnoea ▪ no chest indrawing
Severe	▪ cough ▪ chest indrawing ▪ inability to feed or stridor at rest

Prevention

The best preventive measure is practicing good hygiene. A sick child and the people in the household should wash their hands frequently. In general, the more intimate physical contact (such as hugging, snuggling, or bed sharing) that takes place with an ill child, the greater the risk of spreading the infection to other family members. Vaccines are one of the most cost-effective preventive tools available, and in recent years, meaningful progress has been made in using them to reduce acute respiratory inspections. The opportunity to transform patterns of ARI is evident in the developed world, where widespread vaccination has dramatically reduced death from pediatric pneumonia and pertussis, has lessened the risk of influenza, and has almost eradicated measles.

References
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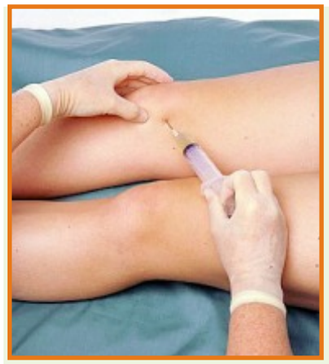
Arthrocentesis of the knee



Arthrocentesis is an intervention that can be both diagnostic and therapeutic. It has been called a "liquid biopsy of the joint." It is absolutely essential when considering the diagnosis of a septic joint and can guide therapy in crystalline diseases. Steroid injections may improve quality of life by suppressing pain and inflammation, increasing function and making exercise regimens possible. In many instances, injection and aspiration can be done by primary physicians. It is absolutely essential to understand the anatomy of the area you want to inject to avoid major neurovascular structures.

Equipments

- Gloves: used for personal protection; use sterile if you anticipate touching the sterile field or equipment, otherwise nonsterile gloves are adequate
- Iodine preparation: bactericidal upon air drying on skin
- Isopropyl alcohol: iodine removal (second preparation)
- Ball-point pen with retractable tip (use end of barrel with point retracted; press tip into skin leaving indentation; marks site throughout procedure)
- Anesthesia
  - Lidocaine (1% or 2% without epinephrine): local anesthesia of skin, subcutaneous tissue and joint capsule
  - Skin Refrigerant spray (e.g. Ethyl Chloride): anesthesia for skin (may be associated with more skin pigmentation changes especially in those with darker skin)
- Needles: 27-25 small, 22-20 medium, 18-16 large
- Syringes: 1, 3, 5, 10, 20 and 50cc
- Hemostat: can be used to hold base of needle for changing syringes
- 2 x 2 gauze pads
- Adhesive bandages

Indications

Diagnostic	Therapeutic

▪ Infectious arthritis
▪ Crystals (e.g. gout, calcium pyrophosphate dihydrate deposition disease)
▪ Confirmation of diagnosis
  ▪ Suspected soft tissue problems (e.g. epicondylitis) can be confirmed when symptoms improve after injection with local anesthetic
  ▪ Suspected inflammatory arthritis can be confirmed and ruled out
▪ Others
  ▪ Hemorrhage (e.g. coagulation disorders, trauma etc)
  ▪ Pigmented villonodular synovitis
  ▪ Ochronosis
	▪ Pain relief (e.g. both articular and nonarticular) when conservative measures have failed
	▪ Reduction of intraarticular pressure
	▪ Removal of damaging purulent fluid
	▪ Installation of medication (e.g. steroids)

Preparation

The knee joint contains the largest synovial cavity in the body and usually represents an easy target of aspiration in the presence of a clinically significant effusion. The knee may be tapped from either the medial or the lateral side. The patient's knee should be extended or flexed at an angle of 15 to 20 degrees. The needle will enter the skin 1 cm medial (or lateral) to the superior third of the patella and is directed toward the intracondylar notch.

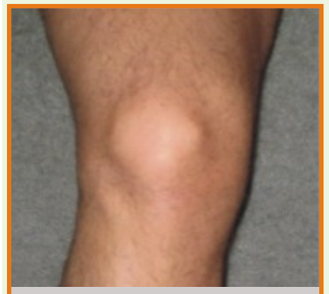
Procedure

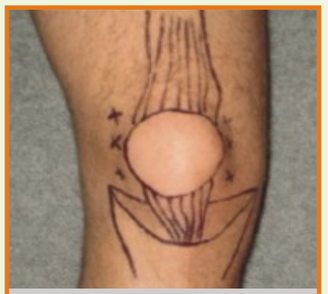
- Explain the procedure to the patient, obtain written informed consent, and then gather the equipment for procedure

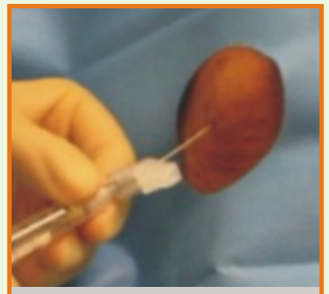
- Position the patient supine on a stretcher, with his or her knee extended or slightly flexed. Identify the landmarks and demarcate the entry site with a skin marking pen or use another appropriate method

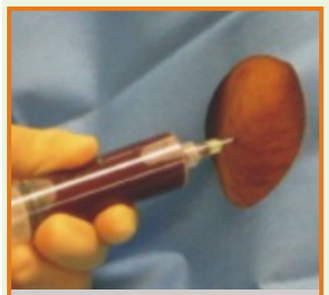
- Prepare the skin with a cleansing agent such as povidone iodine or chlorhexidine. Place a sterile drape around the site

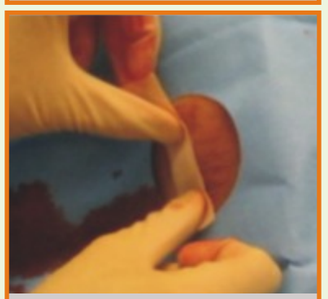
- Begin to anesthetize the region by placing a wheal of lidocaine in the epidermis, using a small (25 gauge) needle and then anesthetize the deeper tissues in the anticipated trajectory of the arthrocentesis needle. Intermittently pull back on the plunger during the injection of the anesthetic to exclude intravascular placement


Septic knee joint


Mark with skin marking pen


Anaesthesia


Aspiration


Adhesive bandages

- Using an 18 gauge needle and large syringe, direct the needle behind the patella and toward the intracondylar notch. Resist the temptation to walk the needle along the inferior surface of the patella, since this practice may damage the delicate articular cartilage

- Constantly pull back on the plunger while advancing the needle; fluid will enter the syringe when the needle enters the synovial cavity

- In cases of large effusions, a second syringe is needed to complete the aspiration

- Once the aspiration is completed, remove the needle, cleanse the skin, and apply a bandage. To reduce postprocedural swelling and discomfort, apply a woven elastic bandage or knee immobilizer

Contraindications

- Cellulitis of skin overlying joint
- Bleeding diathesis
- Bacteremia
- Corticosteroids into a septic or fractured joint
- Difficult anatomy
- Diabetes (corticosteroid may worsen serum glucose)
- Pre-existing tendon injury may be a contraindication to injecting that tendon

Complications

Arthrocentesis is a relatively benign procedure, and if properly performed, complications are rare. Potential complications include iatrogenic infection, localized trauma, pain, and reaccumulation of the effusion.

References:
1. N. Engl. J. Med. Vol.19; Issue 354
2. http://emedicine.medscape.com

Info Quiz Participants

- Have you selected the correct answer(s) you still have time to put your entry submission together for Info Quiz Prize
- The closing date for entries is 15 March 2011
- We look forward to receive your winning entry

Info Quiz Answers
October-December 2010

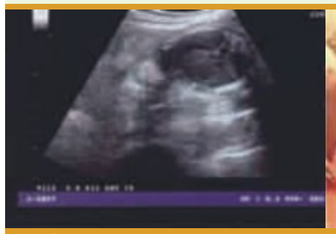
1. c 2. c 3. a 4. c 5. d
6. b 7. b 8. c 9. c 10. a

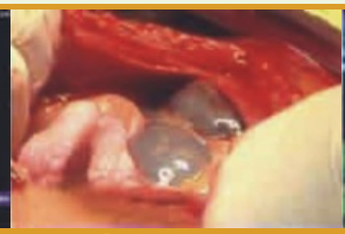
A live intra abdominal pregnancy

Abdominal pregnancy is a potentially life threatening form of ectopic gestation with an incidence of 1.4% of all the ectopic pregnancies and 1:3300 to 1:10200 of all the live births. Aviable live fetal outcome is extremely rare. Even more uncommonly does it reach an advanced age of gestation and a viable fetal outcome is indeed a rare event. This case report is of a 22 year old primigravida with 34 weeks of abdominal pregnancy managed successfully with delivery of a live fetus. Primary abdominal pregnancy has been described in a variety of extrapelvic organs including omentum, liver, spleen and small and large interstine.

Case report

A 22 year old primigravida with a history of eight and half month's amenorrhea presented with pain in the abdomen since 2 days when she was admitted in Hospital. On examination abdomen was unusually tense and tender. Fundal height of the uterus was not appreciable but fetal limbs were palpable more easily than usual. Fetal heart sounds were well heard. Pelvic examination revealed uneffaced, undilated cervix. The initial two antenatal ultrasonography examinations done earlier, reported a single, viable fetus with gestational age of 16 weeks and 28 weeks respectively. The ultrasonography repeated on admission revealed a bulky uterus with no intrauterine pregnancy but a single live extrauterine fetus with 30 to 32 weeks gestational age lying in the peritoneal cavity on the left side. Placenta was visualized in the right iliac fossa. Fetal cardiac activity was 156 beats/minutes. Exploration laparotomy was undertaken; after opening the peritoneum, a live fetus was found lying on the left side. Placenta was in the right iliac fossa. It was lying over the omentum and adherent to rudimentary horn of the uterus. The uterus was in the pelvis. After delivery of the fetus the cord was clamped. Placenta was separated with partial omentectomy. The newborn was thoroughly screened by the neonatologist and found to be premature with severe IUGR with no congenital anomalies. It weighed 800g and had Apgar scores of 2 at birth and 6 after 10 minutes. The baby was shifted to NICU. Mother was discharged on eleven days after admission and the baby was discharged from the hospital eleven days after the mother discharged. As the patient was a migrating laborer, she was later lost for follow up.


Fetal abdomen-surrounded by bowel loops


Fetus lying in the abdomen

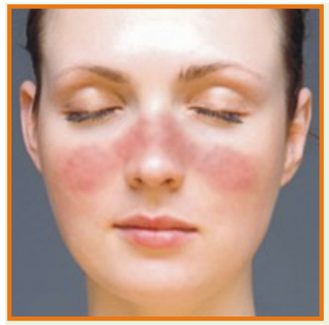

Fetus delivered out

Discussion

Abdominal pregnancies are those in which implantation occurs within the peritoneal cavity excluding tubal, ovarian or intraligamentous sites of implantation. Such pregnancies are potentially life threatening with maternal mortality 7.7 times higher than that associated with intrauterine pregnancy. Viable, advanced abdominal pregnancies are very rare. As the diagnosis of abdominal pregnancy is often missed even with routine ultrasonography examination, every clinician should have a high index of suspicion for this condition. In a patient with amenorrhea, signs and symptoms such as abdominal pain, gastrointestinal disturbances, painful fetal movements, abnormal presentations, uneffaced cervix, vaginal bleeding and syncope should arouse suspicion of ectopic pregnancy especially abdominal. For accurate preoperative diagnosis, CT scan and MRI have been used successfully. A lateral x-ray showing fetal parts overlying maternal spine is also helpful. Optimal management requires careful evaluation and planning. Generally speaking for previable abdominal pregnancies i.e. prior to 24 week of gestation, immediate operative intervention is indicated but for viable pregnancies presenting after 24 weeks of gestation a more conservative approach is advocated provided the patient can be under strict observation preferably in a hospital. Maternal and perinatal mortality of abdominal pregnancy is very high, about 0.5-18% and 40-95% respectively.

Reference: J Obstet Gynecol India, March - April 2010; Vol. 60, No. 2: 157-159

Systemic lupus erythematosus



Systemic lupus erythematosus (SLE) is a prototype systemic autoimmune disorder characterized by multiple organ system involvement and fluctuating disease activity that is difficult to predict. The pathogenesis of SLE is driven by a combination of genetic risk factors and environmental events that lead to an irreversible breakdown in immunological self tolerance. SLE is characterized by a 9:1 female to male incidence, with peak incidence rates occurring during the reproductive years. However, individuals of both genders, all ages, and all ancestral backgrounds are susceptible.

Criteria for diagnosis of SLE

Critertion	Defination/Example
Serositis	Pleurisy, pericarditis on examination or diagnostic ECG or imaging
Oral ulcers	Oral or nasopharyngeal, usually painless; palate is most specific
Arthritis	Nonerosive, two or more peripheral joints with tenderness or swelling
Photosensitivity	Unusual skin reaction to light exposure
Blood disorders	Leukopenia ($<4 \times 10^3$ cells/μL on more than one occasion), lymphopenia (<1500 cells/μL on more than one occasion), thrombocytopenia ($<100 \times 10^3$ cells/μL in the absence of offending medications), hemolytic anemia
Renal involvement	Proteinuria (>0.5 g/d or 3+ positive on dipstick testing) or cellular casts
ANAs	Higher titers generally more specific (>1:160); must be in the absence of medications associated with drug-induced lupus
Immunologic phenomena	dsDNA; anti-Smith (Sm) antibodies; antiphospholipid antibodies (anticardiolipin immunoglobulin G [IgG] or immunoglobulin M [IgM] or lupus anticoagulant)
Neurologic disorder	Seizures or psychosis in the absence of other causes
Malar rash	Fixed erythema over the cheeks and nasal bridge, flat or raised
Discoid rash	Erythematous raised-rimmed lesions with keratotic scaling and follicular plugging, often scarring

Diagnosis Criteria

The diagnosis of SLE should be suspected in patients having a multi system disease with positive serologic features. Because SLE is a disease with multiple organ involvement associated with a complexity of symptoms, the American Rheumatism Association has proposed a set of diagnostic criteria. The presence of 4 or more of the 11 current criteria, either serially or simultaneously, indicates that the diagnosis of SLE can be made with reasonable probability. These criteria are associated with various body systems (e.g. renal, hematologic, gastrointestinal).

Management

Management is considered after diagnosis and assessment of SLE activity. Regardless of the severity of the disease, the following general therapeutic measures are applicable. Patient and family education associated with the chronic nature of SLE, its remissions and exacerbations, is very valuable. The patient should be reassured that a relatively normal life (e.g. job, marriage) is usually possible. Patients in remission should be counseled to watch for early signs and symptoms of SLE, and be acutely aware of the presence of infections. They must understand that active SLE may necessitate additional and/or different medications as well as adequate rest. Patients should also be advised to avoid exposure to sunlight, particularly if they have a history of photosensitivity. Because SLE is primarily a disease of young women, pregnancy will frequently be a major concern. In general, pregnancy should be avoided during exacerbations of SLE. The disease can occur during pregnancy and the risk of spontaneous abortion is increased, but normal births occur most frequently.

Drug Therapy

There is no specific cure for SLE, but conservative drug therapy is used for minor disease activity. Aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and indomethacin, can abate fever, joint stiffness, and pain. These drugs are thought to produce their effects by decreasing prostaglandin synthesis. In addition, the NSAIDs may also inhibit rheumatoid factor production.

Topical steroids are most often used to treat rashes encountered with SLE. In some instances hydroxychloroquine, an antimalarial agent is valuable. It can also provide relief of musculoskeletal complaints. If patients are unresponsive to these therapeutic measures or if additional symptoms occur, then such oral corticosteroids as prednisone can be added to the therapeutic regimen. Retinoids, such as isotretinoin (dose of 1 mg/Kg/day), have been used successfully to treat cutaneous manifestations.

Acute lupus pneumonitis may require 60 to 100 mg of prednisone per day. In a few cases, parenteral steroid therapy may be needed to control symptoms. Patients who are slow to respond to steroids can be started on azathioprine.

The most frequent cardiac complication associated with SLE is pericarditis. Salicylates are used for mild pain in daily doses of 3.6 to 4.8 g. If the pain is not relieved, then indomethacin or prednisone can be used.

maintained for 4 to 6 months. At this time, if there has not been an adequate response or if the glucocorticoid side effects are intolerable, then azathioprine or cyclophosphamide is added. Another approach to treating lupus nephritis is the use of "pulse" steroids (e.g. intravenous methylprednisolone). Oral prednisone (20 to 40 mg/day) is given concurrently. Methotrexate and cyclosporine have also been used in treating lupus nephritis.

Medication

Group	Drugs	Dosing	
		Adult	Pediatric
NSAIDs	Ibuprofen	400 mg per oral 4-6 hourly, 600 mg 6 hourly, or 800 mg 8 hourly while symptoms persist; not to exceed 2.4 g/day	20-70 mg/kg/d PO divided tid/qid, start at lower end of dosing range and titrate; not to exceed 2.4 g/day
Antimalarials	Hydroxychloroquine	200 mg per oral daily/12 hourly; if Body weight <130 lb, may be candidate for dose reduction to qd to minimize retinal toxicity	3-5 mg/kg/day (base) per oral daily or divided 12 hourly; not to exceed 6.5 mg/kg/day adult dose
Immunosuppressant Agents	Methotrexate	7.5-25 mg oral/IM every week	Not established
	Cyclophosphamide	500-750 mg/m2 IV every month	500-750 mg/m^2 IV every month
	Azathioprine	1 mg/kg/day per oral for 6-8 wk, increase by 0.5 mg/kg every 4 week until response or until dose reaches 2.5 mg/kg/day	Not established
	IV Immune globulin	2 g/kg IV over 2-5 day	Not established
	Mycophenolate	Titrate to 1 g per oral 12 hourly	15-23 mg/kg per oral 12 hourly
Corticosteroids	Methylprednisolone	1 g/d IV for 3 day	Not established
	Prednisone	5-60 mg/day PO qd or divided bid/qid; taper over week(s) as symptoms resolve	4-5 mg/m^2/day PO; alternatively, 0.05-2 mg/kg PO divided bid/qid; taper over 2 wk as symptoms resolve

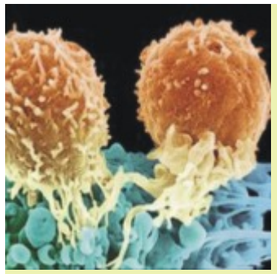
Thrombocytopenia is a frequent result of systemic lupus erythematosus, and thrombocytopenia purpura may be the presenting symptom of SLE. Thrombocytopenia usually responds to prednisone.

Severe or refractory cases of pleuritis with large recurrent effusions often require 20 to 40 mg of prednisone daily.

The initial treatment of lupus nephritis is usually based on results of renal biopsy. If a patient is diagnosed as having diffuse proliferative glomerulonephritis, aggressive steroid therapy is required. Prednisone (60 mg/daily) is usually begun immediately, with continuous assessment of renal function to determine if the dose is effective. Once an appropriate prednisone dose is established for the patient, it should be

Serious CNS manifestations of systemic lupus erythematosus include seizure disorders or psychosis. These problems may be very difficult to control, requiring increasing doses of prednisone (80 to 200 mg/daily) to bring about remission.

References:
1.American College of Rheumatology
2.US Musculoskeletal Review
3.eMEDICINE

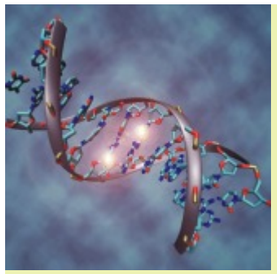


Test tells age from blood drops

Scientists have developed a technique to estimate the age of a suspect from blood left at a crime scene. The technique exploits a characteristic of immune cells carried in the blood known as T cells. As part of the process these T cells use to recognize these invaders, small circular DNA molecules are produced; this DNA molecules known as signal joint TCR excision circles (sjTRECs). The number of these circular DNA molecules declines at a constant rate with age. Scientists said they had shown that this biological phenomenon could be used for estimating the age of a human individual accurately and reliably.

Clue found to penis birth defect

Scientists have identified a DGKK gene which may play a role in a common defect affecting the genitalia of baby boys. They said that this gene was found on the X-chromosome, which in boys can only be inherited from the mother. The latest research found a gene which, when mutated, more than doubled the risk of the condition. The problem starts during the development of the sexual organs in the womb, and while there have been suggestions that exposure to environmental chemicals early in pregnancy may contribute, evidence to support this is not conclusive. The only reliable clue has been the fact that the condition is more likely if a male relative has suffered it - pointing, at least in part, to a genetic origin. Scientists found that a mutated version of the DGKK gene were 2.5 times more likely to be born with hypospadias; it is likely that a number of genes acting together would be responsible for the condition.



Child brain tumour DNA decoded

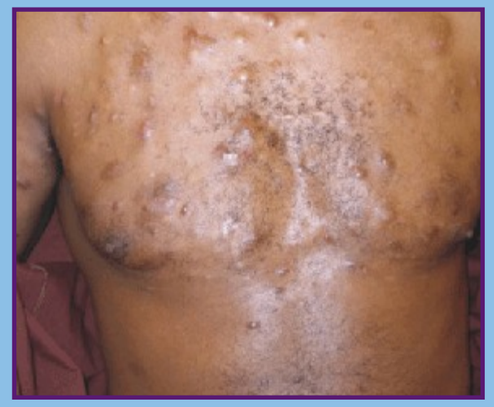
A new genetic mapping study shows childhood brain tumours have fewer genetic mutations than similar tumours in adults. Brain tumours are the leading cause of cancer-related deaths in children. A co-author of the study said the findings on genetic mutations will be helpful in developing new treatments for medulloblastoma, a brain tumour that mainly affects children. The researchers found surgically removed child tumours had five to 10 times fewer genetic changes than did tumour samples from adults. Each child tumour sample had an average of 11 mutations. Among the most frequently mutated genes were those affecting signalling pathways key to normal brain development. Newly identified mutations were found in the MLL2 and MLL3 genes, which are known to help suppress tumours and were not previously implicated in medulloblastoma and interfere with biological signals during development.

Miscarriage raises heart risk

Researchers said that women who had more than three miscarriages had a five-fold increase in risk and the relatively young age of the women meant overall risk remained low, but miscarriages could alert doctors to future problems. They studied the pregnancy history of those who had suffered heart attacks, and compared this to the rate of miscarriages in the other women and found that one in four of the women having reported miscarriage; although this number could be higher because some women become pregnant then miscarry without realizing what has happened. When other factors linked to heart problems with having three or more miscarriages increased the risk of heart attacks by more than 500%.

Reference: http://www.bbc.co.uk

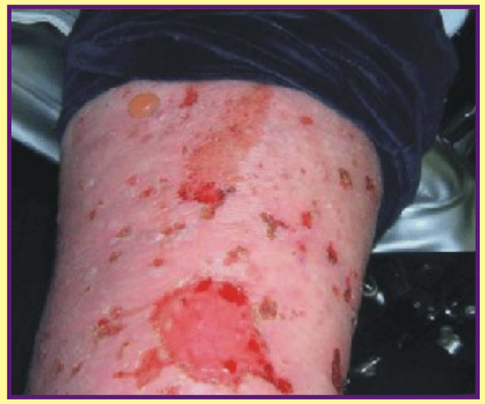
Case 1



A 26 year old black man seeks consultation for a condition affecting his chest, arms and neck. The disorder has waxed and waned in intensity since his early adolescence. Oral antibiotic therapy, commenced on several occasions, has neither decreased new lesion formation nor improved existing lesions. He is unable to recall whether other family members were similarly affected. The disorder is not painful but causes considerable embarrassment to the patient. Examination reveals a multitude of smooth, flesh-colored to erythematous cystic nodules that are not tender to palpation.

What is the diagnosis?

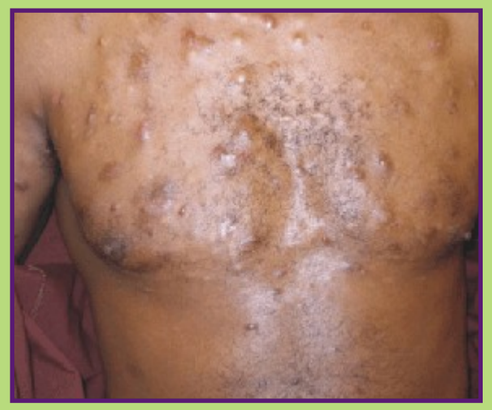
Case 2



A 73 year old Hispanic woman who resides in a nursing home has a blistering eruption on her lower legs and trunk. According to the nursing staff, the condition began several months ago. Blisters appear intermittently and slowly heal with application of topical therapy. The patient reports occasional pruritus. Recently, the frequency of blister formation has increased. Examination reveals scattered bullae and multiple denuded patches.

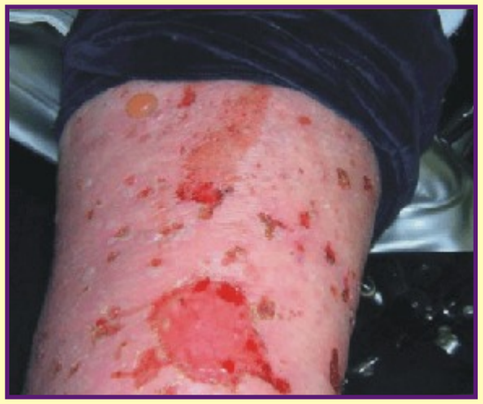
What is the diagnosis?

Answer 1



The patient has steatocystoma multiplex, a disorder of the pilosebaceous follicular units that features the appearance of multiple dermal cysts containing sebum. Some cases are transmitted in an autosomal dominant manner, while others are sporadic. The most commonly affected location is the chest. Usually, the cysts are asymptomatic; however, they occasionally become secondarily infected and tender. Effective treatment options are limited. Oral isotretinoin may prevent new lesion formation, but flare has been reported upon discontinuation. Surgical excision is often impractical due to the number of lesions and propensity for cosmetically unacceptable scarring. Some lesions respond to simple aspiration with a large bore needle.

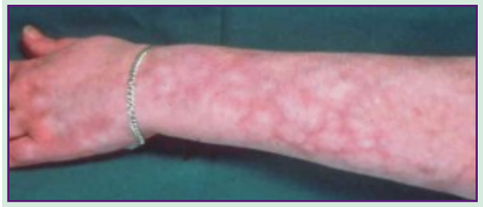
Answer 2



The diagnosis is bullous pemphigoid, a condition that accounts for the majority of autoimmune blistering skin diseases. The disorder is most frequently seen in the elderly, with nearly two-thirds of cases occurring in individuals older than 70. Without treatment, bullous pemphigoid can persist for months and even years. Diagnosis is suspected on clinical grounds (i.e., the presence of bullae in an elderly patient) and is strengthened by light microscopy and direct and indirect immunofluorescence findings on biopsy. The treatment of choice for moderate to severe disease is oral steroids. To avoid rebound flare, these should be gradually tapered once remission has been achieved.

Reference: Emergency Medicine: Vol; 42; No: 11

Hughes syndrome



Hughes syndrome, also known as 'sticky blood' or 'Antiphospholipid Syndrome', is an autoimmune disease which can cause abnormal blood clotting in any blood vessel both arteries and veins. As a result it can cause many different problems. These include clots in the legs known as deep vein thrombosis (DVT), miscarriage and dangerous arterial thrombosis resulting in strokes and heart attacks.

Symptoms

There may be a history of sudden problems such as a blood clot or a miscarriage, or a long story of chronic ill health with headaches, tiredness and other illness. People with Hughes syndrome are at greater risk of venous thrombosis in the legs (DVT), arms and internal organs (kidney, liver, lung, brain, eye), arterial thrombosis, which can lead to recurrent stroke and transient ischaemic attacks (TIAs), neurological problems, and heart attacks, mild thrombocytopenia (low platelet count in the blood), headaches which may be diagnosed as migraines. These may get worse or recur in midlife, multiple sclerosis-like episodes, chorea (abnormal movements), memory loss, seizures, heart valve disease, skin rash known as livedo reticularis, skin sores and lumps, recurrent pregnancy loss.

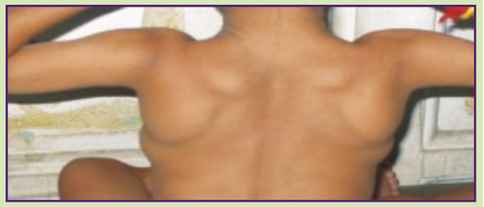
Causes and risk factors

In Hughes Syndrome the body produces antibodies against phospholipids, a type of phosphorous containing fat molecule that's found quite normally throughout the body, particularly in the membranes surrounding each cell. People of any age and gender can be affected, although it's more common among women.

Treatment and recovery

Treatment is simple and aimed at preventing the formation of clots or thrombus using aspirin or heparin, or both. Only a low dose of aspirin is needed (75mg a day, which is about one quarter of an adult aspirin). A woman's chance of carrying a baby to term may be increased from 19 up to 75-80% if aspirin is taken regularly and a heparin injection also given. Heparin doesn't cross the placenta and isn't known to cause any harm to the foetus, although long-term use may be linked to osteoporosis in the mother (newer low molecular weight heparin may cause fewer problems). Once a thrombosis has occurred, warfarin is usually given. However, this treatment must be monitored and can't be given in pregnancy.

Muscular dystrophy



Muscular dystrophies are a group of more than 20 different genetic neuromuscular disorders, some more debilitating than others. Each type differs in its clinical course; some are more severe than others. The most common, Duchenne muscular dystrophy affects 1 in 4000 boys.

Symptoms

Boys with Duchenne muscular dystrophy are generally normal at birth. Their motor development starts normally and most walk at the normal age of 12 months. From the second year of life, they may develop a waddling gait, lack a spring to their step and have problems climbing stairs. In early school years, it may just seem that they are slower and clumsier than their peers. The disease progresses such that the majority will be wheelchair bound by 10 to 14 years.

Causes and risk factors

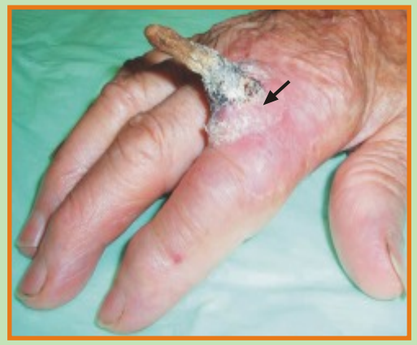
Muscular dystrophies are inherited. Each disease is transmitted by a different genetic trait. Duchenne muscular dystrophy is inherited in an X-linked recessive transmission. That means that females may be carriers but do not have any symptoms (very occasionally they do). A female carrier has a 50% chance of transmitting the faulty gene onto her children. If that is the case and her child is a boy, he will have Duchenne muscular dystrophy, if it is a girl; she will be a carrier and may pass the disease onto her sons. About 30% of cases are due to new mutations, meaning that their mother was not a carrier.

Treatment and recovery

Treatments aim to control symptoms, such as muscle spasm and enable people to have a good quality of life. They include muscle exercises, because inactivity can worsen the disease, physiotherapy to help maintain muscle strength and flexibility and physical aids such as braces or wheelchairs to maintain mobility. It is also important to pay attention to nutritional status and respiratory function. When respiratory function deteriorates, ventilatory support may be needed. Genetic counseling, prenatal diagnosis by chorionic villus sampling and antenatal screening of families with muscular dystrophies provides an opportunity to prevent these diseases being passed on to children. In some areas, Duchenne muscular dystrophy is screened for in the neonatal blood spot.

Reference: http://news.bbc.co.uk/health

Cutaneous horn



A healthy 84 year old woman presented with a 6-month history of a slowly growing asymptomatic lesion on the dorsum of her right hand. Physical examination revealed a keratotic cutaneous horn, approximately 6 to 7 cm in length and yellow-gray in color, with a firm consistency on the dorsoulnar aspect of the base of the right index finger (also involving the web between the index and middle fingers), without associated lymphadenopathy. The lesion was completely excised surgically. Histologic examination showed neoplastic proliferation of atypical keratinocytes extending into the dermis, with large hyperchromatic and pleomorphic nuclei. On the basis of the clinical and histologic findings, a diagnosis of invasive cutaneous squamous-cell carcinoma was made. Imaging and analytical studies revealed neither bony involvement nor metastatic disease. Various types of associated lesions may be found at the base of a cutaneous horn, including squamous-cell carcinoma, other tumors, viral warts, actinic keratosis, keratoacanthoma, Bowen's disease, seborrheic keratosis, and basal-cell carcinoma. The patient underwent two surgical interventions, finally requiring the amputation of the index and middle fingers to achieve tumor-free margins. No clinical relapses were detected after 2 years of follow-up.

Reference: N. Engl. J. Med. Vol. 359, No. 9

Chorioretinal granuloma in tuberculosis

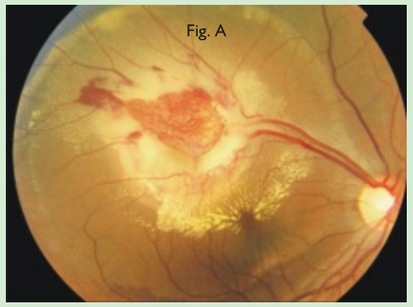


Fig. A

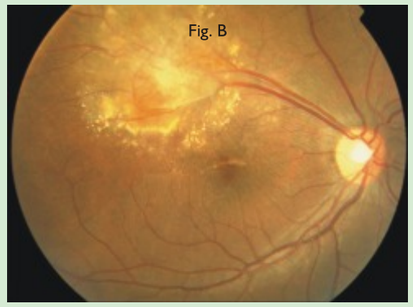


Fig. B

A 17 year old boy presented to the emergency room with a 48 hour history of deterioration in the vision of his right eye. Visual acuity was measured at 6/24 in the right eye and 6/6 in the left eye. In the right eye, a small subhyaloid hemorrhage and an associated vitreous hemorrhage were noted. During the next month, the preretinal hemorrhage cleared, revealing a vascularized chorioretinal granuloma in the superotemporal quadrant. A serous retinal detachment with marked retinal exudate was evident, indicating that the lesion was active (Figure A). A physical examination showed no other abnormalities, and the patient's history was unremarkable except for previous exposure to active pulmonary tuberculosis. A diagnosis of tuberculous chorioretinitis was suspected. Although a chest radiograph was normal, antituberculosis medication was begun on the basis of the history and a strongly positive result on a tuberculin skin test with a purified protein derivative. The lesion gradually resolved over a period of 2 months after treatment with isoniazid, pyrazinamide, rifampin, and ethambutol (Figure B), but the patient's vision remained poor because of the deposition of lipid at the fovea and macular traction.

Reference: N. Engl. J. Med. Vol. 363, No. 23

Jog your memory

Please select the correct answer by tick (✓) against a, b, c, d of each questions in the Business Reply Post card and send it through our colleagues or mail within 15 March 2011; this will ensure eligibility for the Raffle Draw and the lucky winners will get attractive prizes!

1. What is the most prevalent cause of maternal mortality?
   a. Toxemia
   b. Infection
   c. Cardiac disease
   d. Hemorrhage
   e. Diabetes

2. The involution of which of the following fetal blood vessels are normal after birth?
   a. The ductus arteriosus
   b. The ductus venosus
   c. The umbilical artery
   d. All of the above
   e. None of the above

3. Which of the following changes occur in maternal calcium metabolism during pregnancy?
   a. Maternal ph levels decrease
   b. The ionized calcium concentration increases
   c. The total serum calcium level decreases
   d. Intestinal calcium absorption is reduced
   e. None of the above

4. At what age is the head size to body height ratio the highest?
   a. In the newborn
   b. In a 6 year old child
   c. In the adolescent
   d. In the adult
   e. None of the above

5. The occurrence of which of the following symptoms is the least likely to occur in neonatal sepsis?
   a. Fever
   b. The refusal of food
   c. Jaundice
   d. Lethargy
   e. Irritability

6. Which of the following is the most common causative microorganism of bronchiolitis?
   a. Haemophilus influenzae
   b. Pneumococcus
   c. Coxsackie virus
   d. Streptococcus haemolyticus
   e. Respiratory syncytial virus

7. When should an x-ray examination be performed in case of anal atresia?
   a. Immediately after detection of the anomaly
   b. A few hours after birth
   c. 12 hours after birth
   d. The x-ray picture is unrevealing within one day after birth
   e. A few days after birth

8. The occurrence of which of the following symptoms would allow differentiation between delirium and dementia?
   a. An impaired judgment
   b. A memory deficit
   c. An impaired consciousness
   d. An impaired process of thinking
   e. Disorientation

9. Which of the following drugs is contraindicated during pregnancy?
   a. Coumarins
   b. Oral antidiabetic agents
   c. Actinomycin D
   d. Cytotoxic agents
   e. All of the above

10. Which of the following results from the "Tests of Thyroid Function" are elevated in a normal pregnancy?
   a. The basal metabolic rate
   b. The butanol-extractable iodine
   c. The PBI (protein-bound iodine)
   d. All of the above
   e. None of the above