

October-December 2014
Volume 11 Issue 4

ISSN 2222-5188



MEDICUS

The essence of medical practice

Brain Abscess



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Editorial Board

M Mohibuz Zaman
Dr. Rumana Dowla
Dr. S. M. Saidur Rahman
Dr. Tarek Mohammad Nurul Islam
Dr. Md. Rasel Raihan
Dr. Tareq-Al-Hossain
Dr. Adnan Rahman

Published by

Medical Services Department
ACI Limited
Novo Tower, 9th Floor
270 Tejgaon Industrial Area
Dhaka-1208

Designed by

Creative Communication Ltd.
Road # 123, House # 18A
Gulshan 1, Dhaka 1212

Editorial

Dear Doctor,

As the members of the Editorial Board, we are grateful to all our readers for their visible contribution and encouragement that have added to the success of Info Medicus so far. We are confident with your ongoing support and assistance, Info Medicus will continue to be an important medium for disseminating new informations in these rapidly evolving areas of Medical Science. From the clinical perspective, in this issue we have presented "Brain Abscess" in Review Article section. The incidence of brain abscess is remarkable both in developed and developing countries. All though we have modern imaging techniques, advanced diagnostic tools, both surgical and antimicrobial treatment but the brain abscess is still a challenging clinical problem in this modern world. We believe that you will be benefited from this article in your pre-clinical and clinical practices.

Paraphimosis is a urologic emergency which must be treated immediately. As it is a painful clinical condition and if left untreated, paraphimosis can have severe consequence. Due to number of uncircumcised boys is increasing day by day, paraphimosis may become a common problem. That's why we have discussed "Reduction of Paraphimosis in boys" in clinical method.

An obturator hernia is a rare type of hernia in the abdominal wall in which abdominal content protrudes through the obturator foramen. The usual presentation of obturator hernia is acute bowel obstruction where emergency bowel resection is necessary. Because of laxity of the pelvic floor associated with old age, previous pregnancy, emaciation and raised intracranial pressure obturator hernia occurs almost exclusively in multiparous, underweight, older women. Thus, we have inflated case review on "Sudden knee pain in an underweight, older woman: Obturator hernia".

Beside these, we are introducing new section, View Point which will energize your memory regarding "Iodine deficiency disorders".

In Diagnosis at a Glimpse, we have featured three case scenarios which we think will be a pleasurable exercise for you.

Addition to these, we have discussed about "Neck swelling" in Practice. We believe this issue to be more instructive and useful for you on the basis of evolving medical science.

Thanks and best regards,



(Dr. S. M. Saidur Rahman)
Medical Services Manager



(Dr. Rumana Dowla)
Manager, Medical Information & Research

Brain Abscess

A brain abscess is a focal, suppurative infection within the brain parenchyma, typically surrounded by a vascularized capsule. Brain abscess is characteristically defined as a focal suppurative process within the brain parenchyma. The incidence of brain abscesses is highly variable. These abscesses have been reported to account for 1% to 2% and up to 8% of all intracranial space-occupying lesions in patients in developed and developing countries, respectively. The bacterial flora involved in these abscesses consists of aerobes and anaerobes. Abscesses usually develop secondary to the direct spread of infection from sinusitis, mastoiditis, or meningitis or as a result of the hematogenous spread of infection from an extracranial source. Sometimes the primary site of infection remains occult in a number of patients. The clinical manifestations of brain abscesses usually are fever and signs of raised intracranial pressure; however, in some patients, the characteristic signs of infection may be absent. Despite advances in imaging techniques, laboratory diagnostics, surgical interventions, and antimicrobial treatment, brain abscess remains a challenging clinical problem with substantial case fatality rates. Brain abscess can be caused by bacteria, mycobacteria, fungi, or parasites (protozoa and helminths), and the reported incidence ranges from 0.4 to 0.9 cases per 100,000 population. Rates are increased in immunosuppressed patients.



Pathogenesis and epidemiology

In most patients, brain abscess results from predisposing factors, such as underlying disease (e.g., infection with the Human Immunodeficiency Virus [HIV]), a history of treatment with immunosuppressive drugs, disruption of the natural protective barriers surrounding the brain (e.g., due to an operative procedure, trauma, mastoiditis, sinusitis, or dental infection), or a systemic source of infection (e.g., endocarditis or bacteremia). Bacteria enter the brain through contiguous spread in about half of cases and through hematogenous dissemination in about one third of cases, with unknown mechanisms accounting for the remaining cases (Figure 1).

Pathogenic mechanisms of infection are dependent on predisposing conditions. Severe immunocompromise, resulting from immunosuppressive therapy in patients who have undergone solid-organ or hematopoietic stem-cell transplantation or from HIV infection, it is often associated with tuberculosis or nonbacterial causes of infection, such as fungi or parasites. HIV infection is associated with brain abscess caused by *Toxoplasma gondii*, but HIV infection also predisposes patients to infection with *Mycobacterium tuberculosis*. Patients who have received solid-organ transplants are at risk not only for nocardial brain abscess but also for fungal abscess (e.g., resulting from infection by aspergillus or candida species). Fungi are responsible for up to 90% of cerebral abscesses among recipients of solid-organ transplants.

Abscess formation may occur after neurosurgical procedures or head trauma. In these cases, infection is often caused by skin-

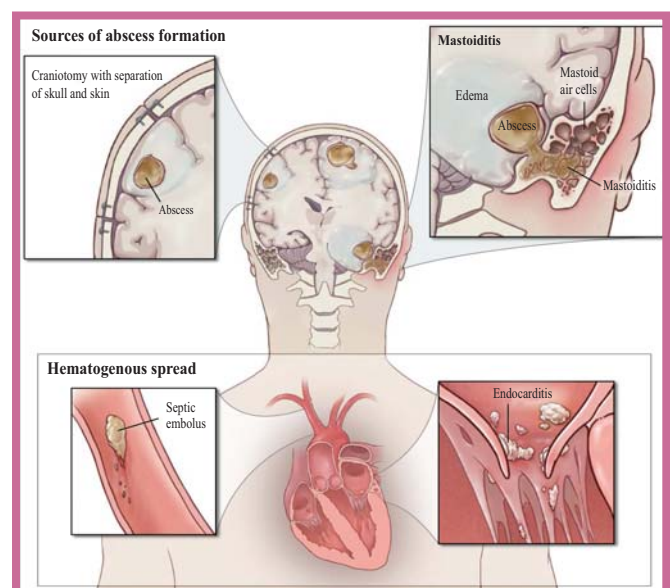


Figure 1: Pathogenic Mechanisms of Brain-Abscess Formation

Bacterial invasion of the brain leading to abscess formation may be due to the direct spread from contiguous foci of infection, such as the site of craniotomy or mastoiditis, or to hematogenous spread from pulmonary or cardiac foci of infection.

colonizing bacteria, such as *Staphylococcus aureus* and *S. epidermidis*, or gram-negative bacilli. Brain abscess due to contiguous spread from parameningeal foci of infection (e.g., the middle ears, mastoids, and sinuses) is frequently caused by streptococcus species, but staphylococcal and polymicrobial abscesses (including those caused by anaerobes and gram-negative bacilli) also occur.



The hematogenous spread of bacteria is associated with underlying cardiac disease (e.g., endocarditis or congenital heart defects), pulmonary disease (e.g., arteriovenous fistulas), or distant foci of infection (primarily the skin, paranasal sinuses, and teeth). Staphylococcus and streptococcus species are often identified in brain abscesses after hematogenous spread. The microbial flora of brain abscesses resulting from paranasal sinus or dental infection are often polymicrobial.

The first stage of brain abscess is early cerebritis, which may lead to a perivascular inflammatory response surrounding the necrotic center, with increased edema in the surrounding white matter. Subsequently, the necrotic center reaches its maximum size and a capsule is formed through the accumulation of fibroblasts and neovascularization. The capsule thickens with an abundance of reactive collagen, but inflammation and edema extend beyond the capsule.

Etiology

A brain abscess may develop by direct spread from a contiguous cranial site of infection, such as paranasal sinusitis, otitis media, mastoiditis, or dental infection; following head trauma or a neurosurgical procedure; or as a result of hematogenous spread from a remote site of infection. In up to 25% of cases no obvious primary source of infection is apparent (cryptogenic brain abscess). Up to one-third of brain abscesses are associated with otitis media and mastoiditis, often with an associated cholesteatoma. Otogenic abscesses occur predominantly in the temporal lobe (55% to 75%) and cerebellum (20% to 30%). In some series up to 90% of cerebellar abscesses are otogenic. Common organisms include streptococci, *Bacteroides* spp., *P. aeruginosa*, and Enterobacteriaceae. Abscesses that develop as a result of direct spread of infection from the frontal, ethmoidal, or sphenoidal sinuses and those that occur due to dental infections are usually located in the frontal lobes. Approximately 10% of brain abscesses are associated with paranasal sinusitis, and this association is particularly strong in young males in their second and third decades of life. The most common pathogens in brain abscesses associated with paranasal sinusitis are streptococci (especially *S. milleri*), *Haemophilus* spp., *Bacteroides*.

Clinical manifestations

The most frequent clinical manifestation of brain abscess is headache; fever and altered level of consciousness are frequently absent. Neurologic signs depend on the site of the abscess and can be subtle for days to weeks. Behavioral changes may occur in patients with abscesses in the frontal or right temporal lobes. Patients with abscesses in the brain stem or cerebellum may present with cranial nerve palsy, gait disorder, or either headache or altered mental status owing to hydrocephalus. Up to 25% of patients

present with seizures. Clinical manifestations become more evident as the abscess grows larger and the surrounding edema increases, but these symptoms and signs may be difficult to recognize because of sedation or the nature of the underlying neurologic disease. Patients with hematogenous spread of bacteria may present with symptoms of the underlying infection. The differential diagnosis includes a range of neurologic and infectious diseases, such as brain tumors, stroke, bacterial meningitis, epidural abscess, and subdural empyema. Primary central nervous system lymphoma is part of the differential diagnosis in patients infected with HIV.

Diagnostic measures

Cranial imaging should be performed in all patients with suspected brain abscess. Computed tomographic (CT) scanning with contrast enhancement provides a rapid means of detecting the size, number, and localization of abscesses. Magnetic resonance imaging (MRI), combined with diffusion-weighted and apparent-diffusion-coefficient images, is a valuable diagnostic tool in differentiating brain abscess from primary, cystic, or necrotic tumors (Figure 2).

Cultures of blood and cerebrospinal fluid identify the causative pathogen in approximately one quarter of patients. Cultures of cerebrospinal fluid may be valuable in patients with coexisting meningitis. However, the risk of brain herniation must be considered in these patients. Lumbar puncture should be performed only when there is clinical suspicion of meningitis or abscess rupture into the ventricular system and when there are no contraindications for lumbar puncture, such as brain shift on cranial imaging or coagulation disorders. Underlying dental, paranasal sinus, ear, and skin foci of infection should be cultured; surgical removal of these foci may be required.

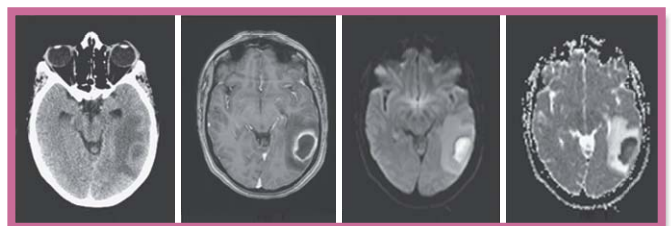


Figure 2: Imaging Studies of Brain Abscess

Management

Neurosurgical management

Neurosurgery is imperative for the identification of the causative pathogen, if it has not been determined otherwise, and, in selected patients, for the purpose of reducing the size of the abscess. With the use of modern stereotactic neurosurgical techniques, almost any brain abscess that measures at least 1 cm in diameter is amenable to stereotactic aspiration, regardless of location (Figure 3). Stereotactic navigation systems can be used for abscess drainage, and images obtained with volumetric CT or MRI can be used to



build a three dimensional reconstruction of the patient's brain. Careful trajectory planning can then be optimized from the point of brain entry to the abscess to avoid "eloquent" brain tissue.

Stereotactic aspiration of the purulent center should be performed for the purposes of diagnosis and decompression unless it is contraindicated because of the suspected organism type or the patient's clinical condition. If brain imaging does not show a central cavity in the abscess, careful consideration should be given to the choice between performing a stereotactic biopsy of the area of presumed cerebritis and administering empirical antimicrobial treatment with follow-up cranial imaging. In HIV-infected patients with probable toxoplasmosis, presumptive therapy may be justified in the absence of a tissue-based diagnosis when tests for antitoxoplasma IgG antibodies are positive. In rare cases, surgery is withheld because poor health status or coexisting conditions would increase the surgical risk. If stereotactic navigation is not available, intraoperative ultrasonography can be performed through a burr hole or small craniotomy in order to direct abscess drainage, but this approach is not recommended for small abscesses in deep brain locations.

Diagnostic aspiration should be aimed at achieving maximal drainage of the abscess. Continuous drainage, made possible by

placing a catheter into the abscess cavity, has been advocated as a means of decreasing reoperation rates, but this technique is not routinely recommended. Some experts advise postoperative administration of antimicrobial agents directly into the abscess cavity through the drainage catheter, since antimicrobial penetration into the abscess cavity after systemic administration can be limited, but there are few data on the risks and benefits of this approach and it is not routinely recommended. Nevertheless, if an abscess is

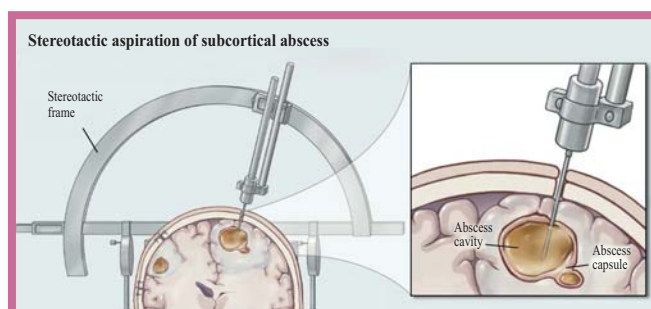


Figure 3: Stereotactic Aspiration
Minimally invasive aspiration may be achieved by means of a stereotactic frame.

superficial and is not located in eloquent brain tissue, resection, rather than drainage, should be considered, particularly when there is suspicion of fungal or tuberculous infection or of branching bacteria (e.g., actinomyces or nocardia species).

Table 1: Predisposing Conditions and Microbial Isolates in Patients with Brain Abscess

Predisposing Condition	Common Microbial Isolates
Immunocompromise	
HIV infection	<i>Toxoplasma gondii</i> , nocardia and mycobacterium species, <i>Listeria monocytogenes</i> , <i>Cryptococcus neoformans</i>
Neutropenia	Aerobic gram-negative bacilli, aspergillus species, Mucorales, candida and scedosporium species
Transplantation	Aspergillus and candida species, Mucorales, scedosporium species, Enterobacteriaceae, nocardia species, <i>T. gondii</i> , <i>Mycobacterium tuberculosis</i>
Contiguous spread of bacteria	
Penetrating trauma or neurosurgery	<i>Staphylococcus aureus</i> , <i>S. epidermidis</i> , streptococcus species (anaerobic and aerobic), Enterobacteriaceae, clostridium species
Otitis media or mastoiditis	Streptococcus species (anaerobic and aerobic), bacteroides and prevotella species, Enterobacteriaceae†
Paranasal sinusitis	Streptococcus species (anaerobic and aerobic), bacteroides species, Enterobacteriaceae, <i>S. aureus</i> , haemophilus species
Hematogenous spread of bacteria	
Lung abscess, empyema, bronchiectasis	Fusobacterium, actinomyces, bacteroides, prevotella, nocardia, streptococcus species
Bacterial endocarditis	<i>S. aureus</i> , streptococcus species
Congenital heart disease	Streptococcus and haemophilus species
Dental infection	Mixed infection with fusobacterium, prevotella, actinomyces, bacteroides, and streptococcus species (anaerobic and aerobic)



Table 2: Antimicrobial Therapy in Patients with Brain Abscess

Treatment	Therapy*
Empirical treatment	
Standard	Cefotaxime or ceftriaxone plus metronidazole; alternatively, meropenem, add vancomycin if infecting pathogen
For transplant recipients	Cefotaxime or ceftriaxone + metronidazole, voriconazole & trimethoprim-sulfamethoxazole
For patients with HIV infection	Cefotaxime or ceftriaxone + metronidazole, pyrimethamine & sulfadiazine; consider isoniazid rifampin, pyrazinamide, and ethambutol to cover possible tuberculosis infection
Treatment based on isolated pathogen	
Bacteria†	
Actinomyces species‡	Penicillin G
Bacteroides fragilis‡	Metronidazole
Enterobacteriaceae‡	Cefotaxime or ceftriaxone
Fusobacterium species‡	Metronidazole
Haemophilus species‡	Cefotaxime or ceftriaxone
Listeria monocytogenes	Ampicillin or penicillin G§
Mycobacterium tuberculosis	Isoniazid, rifampin, pyrazinamide, and ethambutol
Nocardia species	Trimethoprim-sulfamethoxazole or sulfadiazine
Prevotella melaninogenica‡	Metronidazole
Pseudomonas aeruginosa	Ceftazidime or cefepime§
<i>S. aureus</i>	
Methicillin-sensitive	Nafcillin or oxacillin
Methicillin-resistant	Vancomycin
<i>S. anginosus</i> group, other streptococcal species‡	Penicillin G
Fungi	
Aspergillus species	Voriconazole
Candida species	Amphotericin B preparation ϕ
Cryptococcus neoformans	Amphotericin B preparation ϕ
Mucorales	Amphotericin B preparation
Scedosporium apiospermum	Voriconazole
Protozoa	
<i>T. gondii</i>	Pyrimethamine plus sulfadiazine

* The preferred daily doses of antimicrobial agents in adults with normal renal and hepatic function are as follows (with intravenous administration advised unless otherwise specified): cefotaxime, 2 g every 4 to 6 hours; ceftriaxone, 2 g every 12 hours; metronidazole 500 mg every 6 to 8 hours; meropenem, 2 g every 8 hours; vancomycin, 15 mg per kilogram of body weight every 8 to 12 hours to maintain a serum trough level of 15 to 20 µg per milliliter; penicillin G, 2 to 4 million units every 4 hours (or a continuous infusion of 12-24 million units daily); ampicillin, 2 g every 4 hours; isoniazid, 300 mg every 24 hours (oral); rifampin, 600 mg every 24 hours (oral); pyrazinamide, 15 to 30 mg per kilogram every 24 Hours (oral); ethambutol, 15 mg per kilogram every 24 hours (oral); trimethoprim-sulfamethoxazole, 10 to 20 mg of Trimethoprim plus 50 to 100 mg of sulfamethoxazole per kilogram per day, administered in two to four divided doses; sulfadiazine, 1 to 1.5 g every 6 hours (oral); ceftazidime, 2 g every 8 hours; cefepime 2 g every 8 hours; nafcillin, 2 g every 4 hours; oxacillin, 2 g every 4 hours; voriconazole, 4 mg per kilogram every 12 hours after a loading dose of 6 mg per kilogram every 12 hours for two doses; amphotericin B deoxycholate, 0.6 to 1.0 mg per kilogram every 24 hours with doses of up to 1.5 mg per kilogram for patients with aspergillosis or mucormycosis; amphotericin B lipid complex, 5 mg per kilogram every 24 hours; liposomal amphotericin B, 5 to 7.5 mg per kilogram every 24 hours; pyrimethamine, 25 to 75 mg every 24 hours (oral); and sulfadiazine, 1 to 1.5 g every 6 hours (oral).

† The specific agent of choice depends on the results of in vitro susceptibility testing.

‡ These bacteria may be isolated as part of a mixed infection, and combination therapy may be needed.

§ An aminoglycoside should also be considered (e.g., 1.7 mg of gentamicin per kilogram every 8 hours).

ϕ The addition of 25 mg of flucytosine per kilogram every 6 hours should be considered; serum trough levels of 50 to 100 µg of flucytosine per milliliter should be maintained.



If the causative pathogen has been identified, the indication for aspirating the abscess depends on its size and location, the patient's clinical condition, and the likelihood of achieving meaningful decompression through aspiration. In a small case series, treatment was prone to failure when therapy consisted of antimicrobial agents alone. An abscess size of more than 2.5 cm in diameter has been recommended as an indication for neurosurgical intervention, but data from comparative studies are lacking, and this size cannot be regarded as a definitive indication for aspiration. In patients with multiple small brain abscesses, the largest abscess should be aspirated for diagnostic purposes; the decision to aspirate other abscesses should be made on the basis of their size, the extent of surrounding edema, the patient's symptoms, and the response to antimicrobial treatment. For patients in whom the abscess causes brain shift, leading to brain herniation, neurosurgical intervention may be indicated irrespective of the abscess size. If an abscess is abutting but has not yet ruptured into the ventricular system, drainage should be considered to prevent rupture of the abscess and resulting ventriculitis.

Microbiologic evaluation of cerebrospinal fluid, blood, or aspirate from the abscess should include Gram's staining and aerobic and anaerobic cultures. In immunocompromised patients and patients with risk factors such as a history of pulmonary tuberculosis or opportunistic infection, smears and cultures should be obtained for mycobacteria, nocardia species, and fungi, and a polymerase chain reaction (PCR) assay for *T. gondii* should be performed. If a bacterial brain abscess is strongly suspected but the culture results are negative, PCR-based 16S ribosomal DNA sequencing may provide a definitive etiologic diagnosis, allowing for targeted antimicrobial therapy.

Antimicrobial therapy

A delay in the initiation of antimicrobial therapy can result in a poor outcome, as indicated by a retrospective study in which the median interval between diagnosis and the start of antimicrobial therapy was 2 days. The investigators concluded that antimicrobial therapy should be started when there is clinical suspicion of a brain abscess. Because the administration of antimicrobial agents before stereotactic aspiration of the abscess may reduce the yield of bacterial cultures, it is reasonable to postpone the therapy until after neurosurgery has been performed, but only if the disease is not severe, the patient's condition is clinically stable, and surgery can be performed within a few hours. Caution is warranted with this approach, since the abscess may progress rapidly and unexpectedly, irrespective of the initial level of disease severity. The choice of initial antimicrobial therapy should be based on the organisms that

are the most likely cause of the disease, as determined on the basis of the mechanisms of infection and the patient's predisposing condition, on patterns of antimicrobial susceptibility, and on the ability of the antimicrobial agent to penetrate the abscess (Table 1 and Table 2).

Important criteria for evaluating treatment are the neurologic condition of the patient and abscess size on cranial imaging. Cranial imaging should be performed immediately if there is clinical deterioration, after 1 to 2 weeks if there is no improvement, and on a biweekly basis for up to 3 months until clinical recovery is evident. Indications for further neurosurgery are clinical deterioration with an increasing abscess size on cranial imaging, despite the use of antimicrobial therapy.

Complications and outcome

For patients with a decline in consciousness, immediate brain imaging is indicated to detect hydrocephalus or impending brain herniation. Abscess rupture into the ventricular system results in ventriculitis, often leading to hydrocephalus, and is associated with high mortality (ranging from 27% to 85%). In patients with rupture, placement of an external ventricular catheter provides a means of draining and sampling cerebrospinal fluid and monitoring intracranial pressure, as well as providing a direct route for the administration of intraventricular antibiotics, if needed. Hydrocephalus is also common in patients with abscesses in the posterior fossa. A decline in consciousness may also be caused by seizures or status epilepticus. Randomized studies of the use of prophylactic antiepileptic drugs in patients with brain abscess have not been performed. In one study involving patients with brain tumors, preventive treatment with antiseizure drugs was not associated with decreased seizure rates. Anticonvulsant treatment is not routinely indicated in patients with brain abscess.

The outcome for patients with brain abscess has improved over the past 50 years, following improvements in cranial imaging techniques, the use of antimicrobial treatment regimens, and the introduction of minimally invasive neurosurgical procedures. Mortality has declined from 40% in 1960 to 15% in the past decade. Currently, 70% of patients with brain abscess have a good outcome, with no or minimal neurologic sequelae, although data on functional and neuropsychological evaluation after brain abscess are lacking.

References:

1. *Radiology*, February 2004, Volume 230, Number 2: 519-527
2. *N Engl J Med* 2014; 371:447-56
3. <http://65.54.170.250/BrainAbscess>

Reduction of Paraphimosis in Boys

Paraphimosis is a condition in which the foreskin is fully retracted behind the ridge of the glans. Because the foreskin remains behind the ridge of the glans, it may cause irritation and swelling, making it impossible for the foreskin to be pulled back over the glans. This painful condition requires immediate medical attention and early reduction. If left untreated, paraphimosis can have severe consequences, including strangulation of the glans and tissue necrosis. Given the increasing number of uncircumcised boys worldwide, paraphimosis may become more common.



Paraphimosis

Indications

Any patient with a paraphimosis requires urgent medical care. Reduction should be performed immediately.

Contraindications

- Necrosis and ulceration of the foreskin or glans
- Patients with angiomas, warts, or other dermatologic lesions of the foreskin or glans
- Penile swelling is due to paraphimosis and not to another condition, such as a constricting band or insect bites

Equipment

The equipment required for manual reduction of paraphimosis includes

- Nonsterile gloves
- Gauze pads
- Nonalcoholic antiseptic solution (containing chlorhexidine or povidone-iodine)
- Anesthetic gel or cream that does not contain epinephrine

Patient preparation

- The procedure should be explained in detail to the parent or caregiver and to the patient if he is old enough to understand.
- Explain the causative mechanism of paraphimosis and the benefits, risks, and potential complications of the procedure.
- Find out from the parent or caregiver whether the patient has a history of latex or iodine allergies, and obtain oral informed consent to perform the procedure.
- The paraphimosis may be effectively anesthetized by applying a liberal amount of anesthetic gel or cream to the glans and foreskin. Because commonly used local anesthetic agents contain lidocaine, these substances should be avoided in infants younger than 3 months of age and in patients with a predisposition for methemoglobinemia, such as glucose-6-phosphate dehydrogenase deficiency.
- After applying the anesthetic agent, wrap a dry gauze pad around the swollen area of the penis to prevent leakage of the applied material. The pad should be in direct contact with the anesthetic gel or cream.
- Leave it in place for a minimum of 10 minutes before attempting the reduction procedure. An alternative approach to pain control is the use of a penile-nerve block.

Reduction procedure

- Before beginning the procedure, make sure to be seated beside the patient, with the bed or examination table at a height that allows the surgeon to rest elbows on its surface while performing the procedure.
- Although it generally takes only about 10 to 15 minutes to successfully complete a reduction in which manual pressure is used, the procedure can take as long as 30 minutes.



Performing the procedure



- Place the patient in the supine position, and gently disinfect the genital area with antiseptic-soaked pad swabs.
- Check the effectiveness of the topical anesthetic before attempting the reduction.
- If a urethral catheter or preputial implant has been placed, remove it.
- Carefully inspect the penis to make sure that no constricting bands or foreign bodies are present.
- If the swelling of the foreskin is moderate, attempt for gentle reduction.
- Using the tip of one or both thumbs, push the glans through the foreskin opening while simultaneously using the index and middle fingers of both hands to pull distally on the retracted foreskin in order to slide it back over the glans.
- Because the swelling resolves slowly, this step may take longer than expected.
- In patients with severe swelling of the foreskin, reduce the swelling before attempting to perform the procedure.
- Firmly grasping the swollen area and gently squeezing its circumference for several minutes. Use a gauze pad to keep the penis from slipping out of hands.
- Once the edema of the foreskin has been reduced and the foreskin looks flaccid, attempt for manual reduction.



Reduction of a paraphimosis

Reduction of a paraphimosis

- Reduction of the paraphimosis is complete when the phimotic ring is drawn back over the glans.
- Confirm that the procedure is complete by ensuring that the foreskin fully covers the glans.
- The patient's pain should be resolved once the paraphimosis has been successfully reduced.
- Attempts at manual reduction are not always successful.
- If the procedure is not effective, obtain a surgical consultation immediately to determine whether a formal surgical reduction of the paraphimosis is needed.

Postprocedure instructions

- Foreskin should not be retracted for any reason for approximately 1 week after the paraphimosis has been reduced.
- A follow-up appointment should be made. This appointment has two purposes: it serves as a teaching session, during which the practitioner shows the patient, parent, or caregiver how to clean the penis, and it gives the practitioner an opportunity to make sure that everything has healed.

Complications

The most frequent complication of manual reduction of a paraphimosis is the tearing of the preputial ring. This minor complication can be avoided by accomplishing gentle but sustained reduction of the preputial edema before the foreskin is slid back over the glans. If tearing occurs, treat it by applying antiseptic solution to prevent the development of an infection. This complication predisposes the patient to preputial scarring and the recurrence of phimosis.

Summary

Paraphimosis is a urologic emergency that must be treated immediately in the emergency department. In most cases, manual reduction, which is a noninvasive technique, is effective.

Reference: N. Engl. J. Med. 28 March, 2013, 368;13: e16(1-3)

Info Quiz Answers July-September 2014

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Sudden knee pain in an underweight, older woman: obturator hernia

A 92 year old woman with a body-mass index of 14.2 kg/m² presented to emergency department with a 2 day history of sudden onset right knee pain and 1 day of nausea and vomiting. She had no history of abdominal surgery and had given birth to five children by normal vaginal delivery. 2 days before her visit she had been diagnosed with degenerative osteoarthritis of the knee by an orthopaedic surgeon on the basis of radiographs; however, on presentation to our department there was no swelling or tenderness of the knee joint. During examination, she often flexed the right knee to relieve the pain. She had abdominal distension and tenderness to deep palpation, but no signs of peritoneal irritation and no abdominal mass. Rectal examination revealed a small extraluminal mass on the right side.

An abdominal radiograph showed small-bowel obstruction. Axial CT of the abdomen and pelvis showed a fluid-filled mass between the pectineus and external obturator muscles (appendix). Both coronal and sagittal images showed the small intestine herniating into the right obturator canal (Figure). The incarcerated bowel loop had prominent wall enhancement consistent with early vascular compromise. The patient immediately underwent a laparoscopy, which showed a loop of the mid ileum in the right obturator foramen, then reduced the affected bowel loop with gentle traction, restoring viability and rendering bowel resection unnecessary. After that repaired a fingertip sized defect caused by the obturator hernia with a mesh plug. The patient recovered well, and at follow up 1 year later she had no indication of recurrence and no further knee pain. Obturator hernia is rare, and remains a diagnostic and therapeutic challenge. The usual presentation of obturator hernia is acute small bowel obstruction with strangulation, frequently necessitating emergency bowel resection. Because of laxity of the pelvic floor associated with a wide obturator canal, old age, previous pregnancy, emaciation, and raised intra abdominal pressure, obturator hernia occurs almost exclusively in multiparous, underweight, older women. Because the sigmoid colon acts as an anatomical barrier, obturator hernia presents less frequently on the left side. About a third of patients have recurrent bowel obstruction followed by spontaneous remission. A palpable groin mass in the medial thigh is uncommon, because obturator hernia is concealed beneath the pectineus. A hernia is sometimes palpable on rectal or vaginal examination. Occasionally, obturator herniae produce pathognomonic signs because of compression of the obturator nerve, such as the Howship-Romberg sign (pain of the medial thigh, which is exacerbated by extension, abduction, and inward

rotation, and relieved by flexion), and the Hannington-Kiff sign (absent thigh adductor reflex). However, severe abdominal symptoms can mask obturator neuropathy, causing these definitive signs to be mistaken for degenerative arthralgia in older women.

In the era of CT, multiplanar reformations have greatly aided the early and correct diagnosis of obturator hernia.

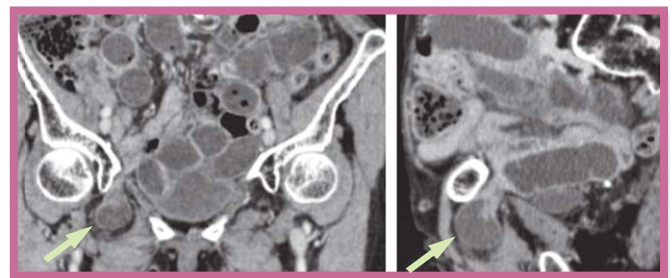


Figure: CT of the pelvis (A) coronal and (B) sagittal images showing the right obturator hernia with bowel incarceration.

Immediate surgical exploration based on an accurate diagnosis is crucial. Many possible surgical approaches exist for repairing obturator herniae, although the choice depends on individual circumstances. Laparoscopic techniques provide a minimally invasive option, and laparoscopy can clarify the best course of action in bowel incarceration and ambiguous cases. Because frail older women are poor candidates for surgery, delays in diagnosis cause high rates of morbidity and mortality, so the timing of CT during the symptomatic period is of paramount importance. Awareness of this disease process with its characteristic presentation is crucial. Heightened clinical suspicion in an underweight older woman should steer clinicians toward timely CT, prompting surgical intervention without delay.

Reference: *The Lancet* July 2014; 384: 206



First dengue vaccine 'shows promise'

Researchers say they have developed the world's first vaccine against dengue fever seen to work in large-scale trials. Research in the Lancet journal suggests more than 50% of children who are given the vaccine are protected against the disease. Half the world's population is at risk of catching the mosquito-borne virus. There are



currently no treatments to prevent dengue fever - an illness which affects more than one million people a year. In the largest late-stage trial of a vaccine to date, researchers from five centers across Asia treated 6,000 children aged between 2 and 14 years old. Some 56% were seen to have protection against the virus at the end of two years. It worked best for children with certain subtypes of the virus and those who had been exposed to it before and the vaccine had an even greater impact on severe forms of the disease, reducing the number of people needing treatment in hospital and preventing 80% of cases of haemorrhagic fever which is a potentially life threatening complication. The biology of dengue is complex and has troubled researchers for many years. People who have been given the vaccine should be monitored for at least five years to ensure it remains effective and safe. And further questions need to be addressed, including how much of an impact it will have in other parts of the world.

Reference: bbc.co.uk

Japanese Researchers Create 30-Minute Ebola Test

Researchers at Japan's Nagasaki University have developed a method that can detect the presence of the Ebola virus in just 30 minutes. Professor Jiro Yasuda of Nagasaki University said the new method is simple than the current one and it can be used in countries where expensive testing equipment is unavailable.

The Yasuda's team developed a substance called "Primer" that amplifies or increases only those genes specific to Ebola virus of blood and tissue fluid, if the virus is present, DNA specific to it is shown within 30 minutes. The new method can use a small, battery

powered warmer, and the researchers believe it can be used in Ebola-affected regions in developing countries.

There are five types of the virus, which differ in the base sequences of their genes. The team selected the six sections of these genes with the fewest differences in sequence among the virus types and made primers that combine with them. Yasuda said the method can probably be used on new types of the Ebola virus.

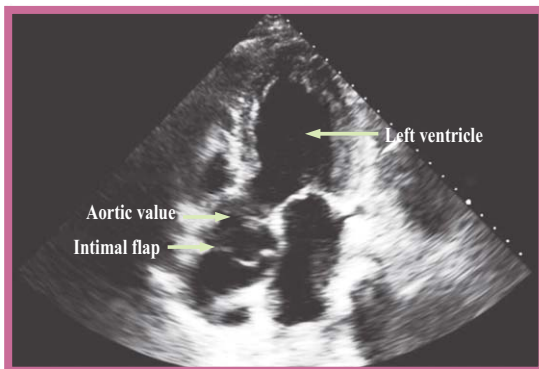
To determine if Ebola is present in a blood sample, it is first detoxified to prevent infection. RNA is extracted from any viruses present in the sample and used to synthesize DNA. This DNA is then mixed with the primers and other substances and placed in a transparent plastic tube. Next, the liquid is heated to 60-65 C. If Ebola is present, DNA specific to the virus is amplified in about 30 minutes due to the action of the primers. The by-products from this process cause the liquid to become cloudy, providing visual confirmation of detection.

Currently, a method called polymerase chain reaction (PCR) is used to detect Ebola infections. PCR relies on the use of a thermal cycler, a machine that repeatedly heats and cools the sample to allow DNA denaturing and synthesis. The process takes up to several hours.

*References: 1. <http://en.ria.ru/world>
2. <http://asia.nikkei.com>*



Problem 1



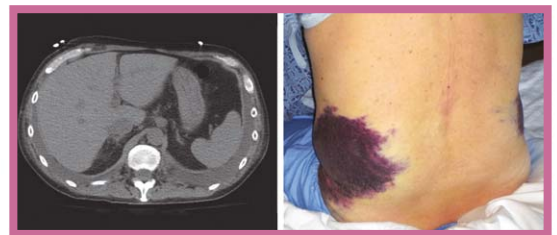
A 69 year old woman with a history of myocardial infarction came to hospital after more than 24 hour of intermittent chest pain, shortness of breath, and diaphoresis. On admission, a 12 lead ECG showed sinus tachycardia without evidence of ischaemia. Biomarkers of myocardial necrosis were negative. A portable chest radiograph and a bedside transthoracic echocardiogram showed pathognomonic findings. The patient underwent urgent repair of the aortic root. The patient survived the immediate postoperative course despite complications of haemodynamic instability, hypotension, and acute renal failure, but later succumbed to multiorgan failure.

What is the diagnosis?

Reference: The lancet 28 June 2014, Vol.383

Problem 2

A 57 year old man presented with dyspnoea and haemoptysis. He had a history of amyloid light-chain systemic amyloidosis with renal involvement and a remote history of pulmonary emboli. He was also currently taking lenalidomide. A ventilation-perfusion lung scan was indeterminate for an acute pulmonary embolus. Therefore, he was empirically anticoagulated with warfarin. Shortly after, he developed significant epistaxis, gingival bleeding, and large bilateral flank ecchymoses. His international normalised ratio was slightly high (4.5).



What is the diagnosis?

Reference: The lancet 31 May 2014, Vol.383


Problem 3



A 14 year old boy came to our clinic with lumps in his oral cavity. His mother informed that the lesions had appeared spontaneously 13 years before. The boy had taken numerous drugs for the condition without effect. Another 8 year old son had similar lesions. The patient was of North American Indian descent. Oral examination showed several papulonodular lesions on the cheek mucosa, lip mucosa, and tongue. The lesions were painless to palpation, soft, of different diameter and similar in colour to normal mucosa.

What is the diagnosis?

Reference: The lancet 22 July 2014, Vol.383

Please see the answers  Page 15

Iodine deficiency disorders

Iodine is an essential micronutrient required for the synthesis of the hormones thyroxine and triiodothyronine. Iodine insufficiency is prevalent throughout the world, and is rated as one of the most significant public health concern in more than 125 countries. An optimal intake of dietary iodine during pregnancy, lactation and early childhood period is crucial for ensuring proper development of the brain of the fetus/newborn. During the course of implementation of the strategy of universal administration of the iodized salt, a wide gamut of challenges has been identified. In order to combat the same and simultaneously enhance the coverage of universal administration of the iodized salt, many measures have been proposed,

namely formulating clear plan with time based targets; encouraging coordination amongst all stakeholders; strengthening of the existing infrastructure; and increasing consumer awareness and demand for adequately iodized salt. To conclude, iodine has a crucial role in ensuring the normal growth and development of the child. However, to expand the coverage of the universal iodized salt to the vulnerable population, sustained political commitment and transparent monitoring and evaluation mechanism is the need of the hour.



Introduction

Food security is considered as a fundamental right at both the individual and population levels. Malnutrition (i.e., under and over nutrition) has been acknowledged as one of the major public health concern affecting all the regions of the world. Much has been said about protein energy malnutrition over the years, but even micronutrient deficiencies (also known as "hidden hunger"), represent an important component of the burden of malnutrition worldwide, especially in developing countries or poor resource settings.

Iodine: The micronutrient

Iodine is an essential micronutrient required for the synthesis of the hormones thyroxine and triiodothyronine. It is also an indispensable component to facilitate normal growth, brain development, and well being. The adult human body contains a storage of about 50 mg of iodine. The daily recommended dietary allowance for iodine in adults and in pregnancy is 150 and 250 µg, respectively. Seafoods, cod liver oil, milk, and meat are a few of the rich sources of iodine. Occurrence of Iodine Deficiency disorders (IDDs) are indirectly attributed to the crops that are cultivated in the iodine deficient soil. Further, it has been estimated that almost 30% of the world's population live in areas with deficient levels of iodine in soil and water.

An optimal intake of dietary iodine during pregnancy, lactation and early childhood period is crucial for ensuring proper development of the brain of the fetus/newborn. Although, the most obvious consequence of iodine deficiency is goiter, recent studies have revealed that there is a much wider spectrum of disorders

commencing with the intrauterine life and extending through childhood into adult life with serious health and social consequences, collectively known as IDD. This spectrum includes disorders such as goiter, subnormal intelligence, delayed motor milestones, strabismus, nystagmus, neuromuscular weakness, endemic cretinism, still birth, hypothyroidism, defect in vision, hearing, and speech, spasticity, mental retardation, and intrauterine death. Majority of the consequences of IDD is invisible and irreversible, but at the same time preventable. Norms have been proposed to classify the extent of iodine deficiency in a specified population on the basis of the median Urinary Iodine Concentration (UIC) as mild (UIC 50-99 µg/l), moderate (UIC 20-49 µg/l) or severe (UIC <20 µg/l). Further, out of the proposed 8 Millennium Development Goals, IDD is directly or indirectly associated with six of them.

Magnitude of Iodine deficiency disorders

Iodine insufficiency is prevalent throughout the world, and is rated as one of the most significant public health concern in more than 125 countries. Secondary to the insufficient dietary consumption of iodine, almost two billion individuals are prone to suffer from IDD worldwide. In fact, the findings of studies done in developed countries such as European countries and Australia have also revealed that decreased UIC, is an inevitable consequence of decreased dietary iodine intake. From the perspective of developing countries, for instance, in India, it has been revealed that the entire population of the country is prone to IDD due to deficiency of iodine in the soil and consequently the food derived from it.



Impact of iodine supplement on infants, newborn, children and antenatal outcomes

Owing to the complete dependence of the fetus on maternal thyroxine levels (i.e., trans placental passage) in the first and the second trimester of pregnancy, even a small reduction in maternal serum levels of thyroxine during antenatal period can result in long-term impairment in the psychomotor development of the child. In fact the finding of a meta analysis revealed that the children living in iodine deficient regions on an average have a lower intelligence quotient, contrary to the children living in iodine sufficient areas. Furthermore, confirmatory evidence is available to reveal that administration of iodine during pregnancy, periconceptional period, and in school augments the growth and development and reduces the risk of mortality as well. In addition, administration of iodine has also found to be effective for enhancing the survival chances of extremely low birth weight preterm babies and for bringing about an improvement in the hearing ability of the children.

As pregnancy is a state of increased energy demands, on a similar note, even the daily recommended dietary allowance for iodine during pregnancy is augmented by more than 60% in comparison with the pre-pregnancy need. If hypothyroidism precipitates in the initial stages of pregnancy, there is a significant risk of miscarriage, premature labor and neurological damage to the fetus. In fact, it has been revealed that regular supplementation of oral iodine for more than three months during antenatal period can significantly improved the pregnancy outcome. Studies have even revealed that iodine administration during lactation period is also advantageous for the breastfed child.

Current strategy

The universally recommended primary strategy for ensuring the elimination of iodine deficiency is through the administration of the iodized salt. Globally, at present around 145 nations have implemented administration of iodized salt, owing to which over 71% of the world's population are consuming iodized salt as recommended. Some of the factors such as formulation of strategies based on the research findings; sustained political commitment; roping in of the private sector; strict enforcement of legislative measures to ensure iodization of salt; and networking with international agencies, have been attributed to the current progress.

Identified challenges

Although considerable progress has been observed in the past

couple of decades, iodine deficiency even now remains a significant health problem worldwide and affects both industrialized and developing nations. During the course of implementation of the strategy of universal administration of the iodized salt, a wide gamut of challenges have been identified, each of which should be tackled efficiently to sustain the success achieved. The identified concerns are insufficient administration of iodized salt during pregnancy and lactation; weak monitoring mechanisms; gaps in the supply and distribution of the salt; minimal awareness activities; poor political will; and occurrence of the adverse side effects secondary to the iodized salt administration (i.e., iodine induced hyperthyroidism in patients with autonomous nodular goiter; iodine induced thyroiditis; and an increased prevalence of occult papillary carcinoma).

Proposed interventions

In order to combat the challenges and simultaneously enhance the coverage of universal administration of the iodized salt, a series of measure have been proposed, namely increasing the political support; formulating clear plan with time based targets; encouraging coordination amongst all stakeholders involved in IDD's control activities; regular monitoring and transparent evaluation activities; strengthening of the existing infrastructure; increasing consumer awareness and demand for adequately iodized salt; sensitizing manufacturers to produce iodized salt; conducting large scale community based surveys to estimate the iodine levels during antenatal period; introducing quality assured iodized salt through public distribution system; intensifying behavioral change communication activities; and empowering community to monitor the quality of iodized salt by using salt testing kits. In addition, iodine induced adverse effects can be completely prevented by maintaining the quality of the iodized salt and by strict monitoring of iodine levels.

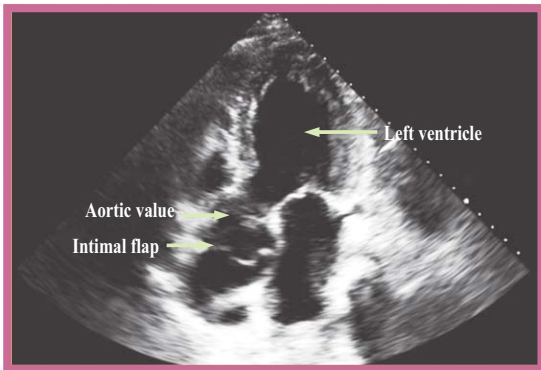
Conclusion

To conclude, iodine has a crucial role in ensuring the normal growth and development of the child. However, to expand the coverage of the universal iodized salt to the vulnerable population, sustained political commitment and transparent monitoring and evaluation mechanism is the need of the hour.

Reference: CHRISMED Journal of Health and Research, Apr-Jun 2014, Vol.1, Issue 2



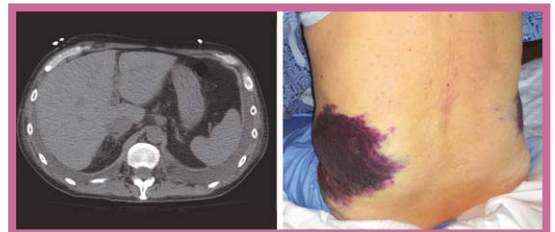
Answer 1



It is a case of acute type A aortic dissection. Delayed presentation of acute aortic syndrome is plagued by high mortality and morbidity. The location of the intimal tear in acute type A aortic dissection is in the immediate vicinity of the sinuses of Valsalva 65% of the time. The sensitivity and specificity of chest radiography is 81% and 89%, respectively. The sensitivity of transthoracic echocardiography is between 78% and 100%; its specificity ranges from 87% to 96%. Transthoracic echocardiography is a valuable diagnostic tool in cases when more sensitive techniques (transoesophageal echocardiography, CT, magnetic resonance angiography) are not readily available or are impractical.

Answer 2

The clinical presentation is most consistent with warfarin toxicity superimposed on the multifactorial haemostatic abnormalities of systemic amyloidosis. However, the Grey Turner sign suggested a large retroperitoneal haematoma. Warfarin was discontinued, an inferior vena cava filter was placed, and he was transfused several units of blood before eventually being discharged. Originally described by Grey Turner in 1920 as a sign of haemorrhagic pancreatitis, flank ecchymoses are caused by blood tracking subcutaneously from a retroperitoneal or intraperitoneal source.



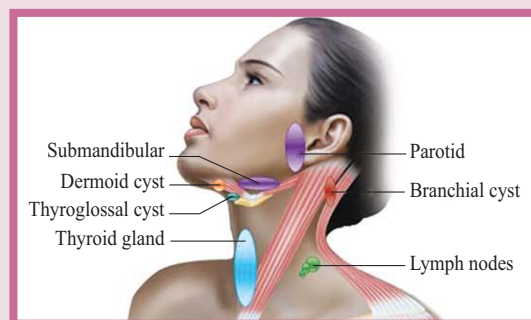
Answer 3



The clinical diagnosis was focal epithelial hyperplasia (FEH), a rare benign condition caused by human papillomavirus subtype 13 or 32. An incisional biopsy was done. Microscopic analysis showed parakeratosis, acanthosis, epithelial hyperplasia, and koilocytic cells, which confirmed FEH. The patient had therapy with CO₂ laser ablation; however, it is not possible to predict when FEH lesions will recur or where new lesions will be seen.

Neck Swellings

Neck swelling are commonly encountered and present at all the ages. Neck swelling is an accumulation of fluid in the neck tissues or inflammation in the neck. Neck inflammation can arise from an infection, injury, or a recent medical procedure. Benign skin conditions can cause small areas of the neck to appear swollen. Swelling of the lymph nodes in the neck is a common symptom of many different types of viral and bacterial infections. The differential diagnosis of neck mass (Table 3) is extensive. Thyroid gland enlargement is a familiar cause of neck swelling in adults. In rare cases, neck swelling can be a result of cancer.



Common neck lumps

More common causes of neck swellings

- **Congenital:** Lymphangiomas, dermoids, thyroglossal cysts
- **Developmental:** Branchial cysts, pharyngeal pouches
- **Skin and subcutaneous tissue:** Sebaceous cyst, lipoma
- **Thyroid swellings:** Multinodular goitre, solitary thyroid nodule
- **Salivary gland tumours:** Pleomorphic adenoma, Warthins tumour
- **Tumours of the parapharyngeal space:** Deep lobe parotid, chemodectoma
- **Reactive neck lymphadenopathy:** Tonsillitis, HIV
- **Malignant neck node:** Carcinoma metastases (unknown primary), lymphoma

In practical terms, the diagnosis is reached from the patients' age, the history, location and physical examination of the neck (Table 2), followed by a thorough examination of the upper aerodigestive tract and the results of appropriate tests and investigations.

Reaching a diagnosis

Reaching a diagnosis obviously requires some knowledge of the potential pathology. It is difficult to present an exhaustive list of the

potential causes of a neck swelling, but a simple classification is tabulated below (Table 1).

- Age
- History
- Location
- Examination of the lump

Age

The first consideration should be the patient's age group (Table 1). In general, neck masses in children and young adults are more commonly inflammatory than congenital and only occasionally neoplastic. However, the first consideration in the older adult should be that the mass is neoplastic. The "rule of 80" is often applied as a useful guide. In adults 80% of non-thyroid neck masses are probably neoplastic and 80% of these masses are malignant. This statement probably refers to masses over 2 cm in diameter, in patients over 35 years of age, and for clinicians who are not regularly seeing patients with neck masses. A neck mass in a child, on the other hand, has a 90% probability of being a benign condition of which 55% are congenital.

Table 1: Age in relation to possible diagnoses

	Child (0-15 years)	Young adult (16-35 years)	Adult (35 years +)
Congenital	Cystic hygroma Thyroglossal duct cyst	Branchial cyst	Very uncommon
Inflammatory	Very common	Less common	Rare
Salivary disease	Inflammatory	Sialolithiasis	Neoplasms
Thyroid disease	Uncommon	Usually endocrine	Most often endocrine
Neoplasms	Malignancy	Papillary carcinoma	Thyroid malignancy
	Rare	Lymphoma	Lymphoma
		Lymphoma Metastases	Lymphoma Squamous cell carcinoma Metastases



History

Onset and duration of symptoms is one of the most important historical points. Inflammatory disorders are usually acute in onset and resolve within 2-6 weeks. Cervical lymphadenitis is often associated with a recent upper respiratory tract infection. In contrast, congenital masses are often present since birth as a small, asymptomatic mass which enlarges rapidly after a mild upper respiratory tract infection. Metastatic carcinoma tends to have a short history with progressive enlargement. Transient post-prandial (after meals) swelling in the submandibular or parotid area is



An adult patient with a large neck mass with systemic symptoms proven lymphoma

suggestive of salivary gland duct obstruction—a stone or a stenosis. Bilateral diffuse tender parotid enlargement is suggestive of parotitis, most commonly mumps, usually school children, and manifests in local epidemics and can only get the disease once.

One must also be mindful that associated symptoms both specifically to the mass and symptoms suggestive of a systemic process such as fever, night sweats, fatigue or weight loss (consider lymphoma) must be sought and documented. Symptoms of sore throat or upper respiratory tract infection may suggest an inflammatory cervical lymphadenopathy. Persistent hoarseness or

sore throat, pain on swallowing, cough and sensation of a lump in the throat are risk symptoms of an upper aerodigestive tract malignancy. The symptoms are particularly relevant in patients who are over the age of 40 years and smoke cigarettes.

Location

While congenital and organ masses are more consistent in their locations, metastatic nodes follow a predictive pattern and help in identifying the primary malignancies.

Examination

A full head and neck examination including mucosal surfaces is important, especially when suspecting malignancies (Table 2).

Diagnostic studies

- Full blood count and ESR.
- Viral serology: Epstein-Barr Virus, cytomegalovirus and toxoplasmosis.
- Throat swab: occasionally helpful (but must be sent immediately in the proper medium).
- Thyroid function tests and ultrasound in all cases of thyroid enlargement.
- Chest X-ray in smokers with persistent neck lump.
- Ultrasound scan (USS) can delineate the position, size, and sometimes the nature of a neck lump. It may delineate impalpable nodes and thyroid nodules. The shape of a lymph node (normally oval with a fatty hilum) can be altered by malignant disease (round shape with irregular margins and altered hilum). Although USS is performed with a view to guiding a fine needle aspiration biopsy (USSgFNAB) it should be noted that a biopsy may not be indicated if the size and nature of the lump is obviously benign.

Table 2: Examination checklist

	Lymphadenitis	Branchial cyst	Goitre	Dermoid cyst	Thyroglossal cyst
Painful	Yes	Possible	Possible	Possible	Seldom
Associated symptoms	Yes	No	Yes	No	No
Moves with swallowing	No	No	Yes	No	Yes
Midline	Uncommonly	No	No	Yes	Yes
Moves on protruding the tongue	No	No	No	No	Yes



- Fine needle aspiration biopsy (FNAB) is helpful for the diagnosis for neck masses and is indicated in any neck mass that is not an obvious abscess and persists following prescribed antibiotic therapies. A negative result may require a repeat FNAB, USSgFNAB or even an open biopsy, correlating with other clinical information.
- Radionucleotide scanning: for suspected parathyroid and thyroid gland masses.
- Computed Tomography (CT) scanning can distinguish cystic from solid lesions, define the origin and full extent of deep, ill-defined masses, and when used with contrast can delineate vascularity or blood flow.
- Magnetic Resonance Imaging (MRI) is useful for parapharyngeal and skull base masses and for assessment for unknown primary carcinomas. With contrast it is good for vascular delineation and MRI angiography may substitute for arteriography in the pulsatile mass or mass with a bruit or thrill.

Table 3: Differential diagnosis according to position

Midline lumps	
	<ul style="list-style-type: none"> • Dermoid cysts • Thyroglossal cyst (moves on protruding lump) • Thyroid lump (moves on swallowing) • Lymphadenopathy
Lateral neck lumps	
Submandibular triangle	<ul style="list-style-type: none"> • Reactive lymphadenopathy (younger age group) • Neoplastic lymphadenopathy (firm, non-tender, older age group) • Submandibular gland disease (sialadenitis, sialolithiasis, neoplasm)
Anterior triangle	<ul style="list-style-type: none"> • Reactive lymphadenopathy or lymphoma (younger age group) • Specific infective adenopathy (TB, HIV toxoplasmosis, actinomycosis) • Neoplastic lymph adenopathy • Branchial cyst (2nd-3rd decades) • Thyroid masses (toxic goitre, cyst, neoplasm: benign or malignant) • Parotid gland disease (sialadenitis, cysts, sialolithiasis, neoplasm) • Paraganglioma (carotid body tumor, glomus vagale) • Laryngocoele (enlarges with blowing) • Cystic hygroma/lymphangioma
Posterior triangle	<ul style="list-style-type: none"> • Reactive lymphadenopathy (younger age group) • Neoplastic lymph adenopathy (firm, non-tender, older age group) • Lipoma • Cervical rib

Reference: BMJ 2014;348



Jog your memory

Please select the correct answer by (✓) against a, b, c, d & e of each question in the Business Reply Post Card (BRPC) and If you have any query/information/comments regarding our products or medical information please write it on the (BRPC) and send it through our colleagues or mail within 15 December, 2014.

1. **A 21 year old man presented after he had injured his back, resulting in hemisection of his spinal cord at T10 level. What is most likely to be present below the level of the lesion 2 months after the injury?**
 - a. Contralateral gross wasting
 - b. Contralateral loss of pain and temperature sensation
 - c. Contralateral loss of proprioception
 - d. Contralateral upper motor neurone weakness
 - e. Ipsilateral gross wasting
2. **A 32 year old man was treated with combination chemotherapy for testicular cancer. Subsequent investigations confirmed a complete clinical remission. What is the dominant cellular process that explains why this therapy was successful?**
 - a. Apoptosis
 - b. Differentiation
 - c. Mutagenesis
 - d. Necrosis
 - e. Senescence
3. **A 21 year old woman presented with watery diarrhoea and cramping abdominal pain 5 days after arriving in Mexico. On examination, her temperature was 37.8°C and there was mild abdominal tenderness. There was some mucus in the stools, but no blood. What is the most likely pathogen?**
 - a. *Aeromonas hydrophila*
 - b. *Entamoeba histolytica*
 - c. *Escherichia coli*
 - d. *Giardia lamblia*
 - e. Rotavirus
4. **A 27 year old man was referred with an acute hepatic illness. Which laboratory finding would indicate the need for inpatient management?**
 - a. Aspartate aminotransferase:alanine aminotransferase ratio >1.0
 - b. Prothrombin time 24 s (11.5-15.5)
 - c. Serum alanine aminotransferase 1400 U/L (5-35)
 - d. Serum alkaline phosphatase 1800 U/L (45-105)
 - e. Serum conjugated bilirubin 110 µmol/L (<3.4)
5. **A 37 year old woman with breast cancer had a family history of breast and ovarian cancer. Molecular genetic testing revealed a BRCA1 mutation. What is the normal function of BRCA1?**
 - a. Angiogenesis
 - b. Apoptosis
 - c. Cell adhesion
 - d. Promotion of mitosis
 - e. Tumour suppression
6. **A 20 year old woman presented 24 hours after taking an overdose of 80 tablets of thyroxine 100 µg. On examination, she was clinically euthyroid. What is the most appropriate treatment?**
 - a. Adrenoceptor blockade
 - b. Forced alkaline diuresis
 - c. Haemodialysis
 - d. No treatment
 - e. Stomach washout
7. **A 16 year old girl presented with non-scaly, discrete areas of hair loss on the scalp. She had a past history of atopic eczema and had a number of depigmented areas on her hands and around her eyes. What is the most likely diagnosis?**
 - a. Alopecia areata
 - b. Hypothyroidism
 - c. Lupus erythematosus
 - d. Seborrhoeic dermatitis
 - e. Trichotillomania
8. **A 70 year old man presented accompanied by his wife, who stated that her husband had lost all interest in life. What would support a diagnosis of dementia rather than depressive disorder?**
 - a. Agitation
 - b. Complaint of poor memory
 - c. Impaired short-term memory
 - d. Loss of libido
 - e. Urinary incontinence
9. **On removal of the renal arterial clamp following a donor kidney transplantation, the surgeon noted changes suggestive of hyperacute rejection. Which immunoglobulin is likely to be responsible?**
 - a. IgA
 - b. IgD
 - c. IgE
 - d. IgG
 - e. IgM
10. **A 47 year old woman was being treated with lithium for bipolar affective disorder. On examination, her blood pressure was 168/104 mmHg. What drug is the most appropriate antihypertensive?**
 - a. Amlodipine
 - b. Bendroflumethiazide
 - c. Doxazosin
 - d. Losartan
 - e. Ramipril



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Q.4	a	b	c	d	e
Q.5	a	b	c	d	e
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