



به نام خداوند جان و خرد



مرد 25 ساله ای که سابقه ادم ریه در صعود بالای 4500 متر داشته است قصد صعود مجدد دارد. جهت جلوگیری از ادم ریه در ایشان، طبق پروتکل استاندارد همه موارد زیر پیشنهاد می گردد، بجز؟

الف) دگزامتازون

ب) سالمترول با دز بالا

ج) نیفیدپین

د) تادالافیل

- Alterations in the alveolar epithelium may also contribute to HAPE. Hypoxia, for example, decreases alveolar transepithelial sodium transport 169 and fluid clearance, 170 with potential effects on alveolar fluid balance. Transalveolar sodium transport can be increased by  $\beta$  2 -receptor stimulation, and a field study reported successful prevention of HAPE with inhalation of the long-acting  $\beta$  2 -agonist salmeterol.
- It is not clear, however, whether the patent foramen ovale causes HAPE or is a sequela of prior marked rises in PA pressure during sojourns to high altitude or during normoxic exercise seen in HAPE-susceptible individuals.
- The nonpharmacologic preventive measures previously described for AMS also apply to HAPE, with a slow ascent being the most important strategy. HAPE-specific pharmacologic prophylaxis is reserved for persons known to be HAPE susceptible based on a prior history of the disease (see Table 105.2 ). The mainstay of prevention is nifedipine, presumably via its action as a potent vasodilator. the phosphodiesterase inhibitor tadalafil, can also prevent HAPE in known susceptible individuals. dexamethasone was also effective in this regard(it is not part of standard HAPE prevention protocols.) salmeterol is also not recommended as a primary option for HAPE prophylaxis.
- Proper treatment depends on the severity of the illness and the clinical setting. In remote locations with limited access to care, the first priority is descent to lower elevation. Exertion should be limited during descent because this may increase PA pressure and worsen pulmonary edema. With early diagnosis, recovery is rapid with descents of only 500 to 1000 m, and the individual may be able to reascend cautiously 2 or 3 days later. If descent is not possible because of weather or other factors, supplemental oxygen or portable hyperbaric therapy should be initiated. If neither option is available, expiratory positive airway pressure may improve oxygenation, although the effect on outcomes has not been established.
- Nifedipine, tadalafil, sildenafil...combination is forbidden....diuretic is avoided..... supplemental oxygen
- Addition of nifedipine or other pulmonary vasodilators to supplemental oxygen may not yield additional benefit, and this treatment is generally reserved for those patients not responding appropriately to supplemental oxygen.
- A single series documented the use of continuous positive airway pressure to relieve dyspnea in HAPE, 168 but there are no controlled data demonstrating improved outcomes. Because fevers up to 38.5°C have been described in HAPE, a finding of elevated temperature should not prompt administration of antibiotics unless the clinical picture is consistent with pneumonia. Patients who do not improve with appropriate therapy should be investigated for other causes of hypoxemia and radiographic opacities.

## Dosing and Use of Altitude-Illness Medications

Medication	Indication	Route	Dosage
Acetazolamide	AMS, HACE prevention	Oral	125 mg q12h Pediatrics: 2.5 mg/kg q12h (maximum, 125 mg/dose)
	AMS treatment	Oral	250 mg q12h Pediatrics: 2.5 mg/kg q12h (maximum: 125 mg per dose)
Dexamethasone	AMS, HACE prevention	Oral	2 mg q6h or 4 mg q12h Pediatrics: Should not be used for prophylaxis
	AMS, HACE treatment	Oral, IV, IM	AMS: 4 mg q6h HACE: 8 mg once then 4 mg q6h Pediatrics: 0.15 mg/kg/dose q6h (maximum: 4 mg per dose)
Ibuprofen	AMS prevention	Oral	600 mg q8h
Nifedipine	HAPE prevention	Oral	30 mg ER version q12h or 20 mg ER version q8h
	HAPE treatment	Oral	30 mg ER version q12h or 20 mg ER version q8h
Tadalafil	HAPE prevention	Oral	10 mg q12h
Sildenafil	HAPE prevention	Oral	50 mg q8h

جوان 32 ساله پس از غرق شدگی دراستخر توسط ناجی غریق به مدت 5 دقیقه CPR شده و در عرض 10 دقیقه به بیمارستان رسانیده شده است. در هنگام معاینه  $T=36.5$ ، فشار خون 70/40 و در عکس قفسه صدی ادم ریه مشاهده می گردد. در این مرحله اقدام درمانی مناسب کدام است؟

الف) شروع کورتیکواستروئید سیستمیک

ب) تجویز مایع بر اساس مانیتورینگ تهاجمی

ج) شروع آنتی بیوتیک پروفیلاکسی

د) برونکوسکوپی درمانی

# Pulmonary edema

- Near-drowning is the one clinically pertinent form of pulmonary edema caused by transmural osmotic pressure differences at the alveolar barrier. 45 Seawater is three times more osmotic (1000 mOsm) than plasma, so the volume of fluid in the air spaces after saltwater aspiration increases threefold to reach osmotic equilibrium, thus markedly increasing the alveolar edema volume beyond the aspirated seawater in the alveoli. Osmotic equilibrium is reached in minutes as water is drawn from neighboring blood vessels into the alveoli by osmotic pressure. 45 Alveolar barrier function is not significantly compromised, unless perhaps the patient aspirates gastric contents or the seawater is contaminated or rich in particulate matter, and the alveolar edema tends to be cleared rapidly if driving pressures are otherwise normal, with 50–60% of excess alveolar fluid being cleared in 4 hours. Freshwater near-drowning classically proceeds in the opposite fashion: Osmotic equilibrium is reached rapidly by flow of water out of the alveoli into the interstitium and bloodstream. Rapid water flux and hypotonicity can cause severe hemodilution, with hemolysis and fibrinolysis, and severe distortion of pulmonary ultrastructure, including damage to type 1 and type 2 cells, endothelial cell swelling, basement membrane detachment, and cell disruption. Both the alveolar epithelium and microvascular endothelium can thus be injured by the hypotonic fluid, leading to increased permeability pulmonary edema rather than an increased pressure type of pulmonary edema. In addition, aspiration of water, whether freshwater or seawater, can wash out surfactant and contribute to pulmonary edema.

# treatment

- Because cardiac arrest caused by drowning results from hypoxemia and acidosis, it is critically important to restore circulation, establish a patent airway, and provide oxygen rapidly. With a suspected drowning victim, the rescuer should provide cardiopulmonary resuscitation with rescue breathing in accordance with basic life support guidelines. Establishing an airway and providing oxygen are priorities in the initial resuscitation. Rescue breathing may even be initiated during extraction from the water. Use of a subdiaphragmatic thrust (Heimlich maneuver) is no longer recommended because most water expelled by this technique originates from the stomach rather than the lungs and increases the risk of aspiration.<sup>180</sup>,<sup>181</sup> Endotracheal intubation is the preferred method for establishing an airway. This approach must account for the possibility of a concomitant unstable neck injury if there is associated trauma, as well as the risk for aspiration of gastric contents.<sup>182</sup> However, without a focal neurologic deficit or significant mechanism of cervical spine injury (e.g., diving into shallow water), the risk for an unstable cervical spine injury is low, and spinal immobilization should not take priority over resuscitation.<sup>183</sup>
- A nasogastric tube should be inserted to decompress the stomach, and core body temperature readings should be obtained to diagnose and manage potential hypothermia. In the presence of a significantly lowered body temperature, rewarming measures should be instituted, although the rate of rewarming and temperature goals for drowning victims after cardiac arrest remain areas of active research. Although mild therapeutic hypothermia has been shown to decrease cerebral oxygen use and improve neurologic outcomes in patients with return of spontaneous circulation after witnessed ventricular fibrillation arrest, there are no prospective studies comparing therapeutic hypothermia with normothermia after return of spontaneous circulation in drowning victims. There are several case reports of complete neurologic recovery after therapeutic hypothermia in drowning victims. Return of spontaneous circulation and hemodynamic stability take precedent over the decision to induce hypothermia.

- Occasionally, drowning patients will have marked hemodynamic instability, and resuscitation must be managed accordingly while accounting for the likelihood of concurrent pulmonary edema and acute respiratory distress syndrome. Positive end-expiratory pressure is extremely effective in reversing abnormal ventilation-perfusion matching leading to hypoxemia. Usually, pulmonary injury from drowning improves significantly over a period of 48 to 72 hours, and ventilatory support in most circumstances is relatively brief, unless infection develops. Consequently, if tolerated, noninvasive positive airway pressure ventilation strategies or a high-flow nasal cannula may be reasonable for short-term support. Oxygenation, ventilation, hemodynamics, and glycemic control should be managed in accordance with current critical care guidelines, including those for management of cerebral edema and post-cardiac arrest critical care, if applicable.
- The use of antibiotics in drowning victims should be reserved for those who demonstrate signs of infection. Because most pulmonary infections in the near drowning victim appear to be hospital acquired, prophylactic antibiotics may serve only to select for more resistant organisms. If pneumonia is present, antibiotic therapy should be guided by microbiologic data, antibiograms, and standard protocols. If the victim aspirates heavily contaminated water with a known or suspected organism (as in the case of aspiration in a hot tub), the use of prophylactic antibiotics may be appropriate. Although bronchoscopy for the routine management of the drowning victim is not warranted, consideration of this procedure should be made when unexpected difficulties with mechanical ventilation arise, to evaluate for rare complications of drowning such as the aspiration of sand or gravel. 186
- Routine use of corticosteroids to treat the lung injury associated with drowning is unwarranted. Experimental evidence strongly suggests that steroids do not improve the short-term or long-term outcome. 187 Artificial and animal-derived surfactants, extracorporeal membrane oxygenation, cardiopulmonary bypass, and hypothermia have also been used to treat the pulmonary injury associated with drowning. 188189190191 Any victim with more than minimal respiratory symptoms, an abnormal chest radiograph, or abnormal arterial blood gas measurements should be observed because pulmonary damage may not be clinically manifest for several hours after the incident. 192 Nearly all patients who will demonstrate significant problems of gas exchange will do so by 4 to 8 hours after the incident; therefore, consideration for discharge from the emergency department may be appropriate in people who can be observed in this fashion. 193 In a pediatric study, normal oxygen saturation and lack of field intervention after pediatric drowning were independent predictors of safe discharge from the emergency department

# PAC

- At this time there is no well-supported intervention to treat PC, and management consists mainly of supportive care and avoidance of iatrogenic injury. Steroids are not recommended, and prophylactic antibiotics are strongly discouraged. In 1973, Trinkle and coworkers<sup>92</sup> recognized that crystalloid administration increased the size of the contusion, whereas diuresis decreased it. Pharmacologic therapies being investigated include arginine vasopressin and dexmedetomidine.<sup>93</sup> In an animal study using a model of PC, dexmedetomidine infusion improved hemodynamic parameters, decreased inflammatory infiltration, and limited the extent of lung damage and pulmonary edema.<sup>94</sup> In patients with early, severe hypoxemia (ratio of arterial P<sub>o2</sub> to fractional concentration of oxygen in inspired gas <200), a trial of noninvasive ventilation may be attempted to avoid intubation; however, the development of pneumothorax must be carefully monitored.<sup>95</sup>, <sup>96</sup> In animal studies, the application of positive end-expiratory pressure has been shown to decrease the size of PCs. Small clinical studies have reported that recruitment maneuvers are successful in improving aeration (“open lung” strategy).<sup>97</sup> In patients with PC, the use of airway pressure release ventilation has been reported to decrease the incidence of ventilator-associated pneumonia; however, experience and evidence are limited.<sup>87</sup> For severe unilateral PC, lung isolation ventilation may be considered.<sup>98</sup> Although traumatic injury (with the attendant risk of bleeding complications) was previously considered a contraindication to extracorporeal membrane oxygenation (ECMO), increasing experience with ECMO without anticoagulation<sup>99</sup> and demonstration of improved outcomes compared with conventional mechanical ventilation for severe hypoxemic respiratory failure have made ECMO (with or without systemic anticoagulation) a viable rescue therapy in experienced centers. The use of other rescue therapies such as high-frequency oscillatory ventilation and surfactant administration for the treatment of PC is poorly studied and considered experimental at this time.
- In sum, for the management of PC, the patient should be resuscitated to maintain signs of adequate tissue perfusion and achieve usual end points of resuscitation. **Once this has been achieved, however, meticulous attention should be paid to the avoidance of excessive fluid administration, to the point of using a pulmonary artery catheter if necessary to help guide diuretic therapy.**<sup>55</sup> Aggressive pulmonary toilet and adequate analgesia are extremely important in preventing pneumonia.

اثرات فیزیولوژیک تغییرات PCO<sub>2</sub> شامل تمامی موارد زیر می شود، بجز:

(الف) هیپوکاپنی باعث افزایش فشار شریان ریوی می شود.

(ب) هیپوکاپنی باعث برونکوکانستراکشن می شود.

(ج) هیپوکاپنی باعث افزایش کمپلیانس ریه می شود.

(د) هیپوکاپنی باعث کاهش O<sub>2</sub> Demand می شود.

<b>System</b>	<b>Effect</b>
Cardiovascular	<ul style="list-style-type: none"><li>▪ Decreased cardiac contractility</li><li>▪ Decreased systemic vascular resistance</li><li>▪ Secondary effects due to sympathoadrenal activation</li><li>▪ Coronary vasodilation</li></ul>
Respiratory	<ul style="list-style-type: none"><li>▪ Rightward shift of oxyhemoglobin dissociation curve</li><li>▪ Pulmonary vasoconstriction (mild)</li><li>▪ Direct dilation of small airways</li><li>▪ Indirect constriction of large airways</li><li>▪ Increased lung compliance</li><li>▪ Impaired alveolar fluid reabsorption and alveolar epithelial repair <sup>73</sup></li></ul>

Central nervous system	<ul style="list-style-type: none"><li>▪ Cerebral vasodilation and increased cerebral blood flow</li><li>▪ Increased intracranial pressure</li><li>▪ Increased cerebral oxygenation</li><li>▪ Biochemical changes (e.g., increased glutamine)</li><li>▪ Stimulation <sup>39</sup></li></ul>
Metabolic	<ul style="list-style-type: none"><li>▪ Intracellular acidosis causing inhibition of glycolysis</li><li>▪ Increased renal bicarbonate resorption</li></ul>
Inflammation and Immunity	<ul style="list-style-type: none"><li>▪ Inhibition of neutrophil and macrophage migration and adhesion</li><li>▪ Decreased secretion of proinflammatory cytokines</li><li>▪ Decreased free radical generation</li></ul>

مردی 27 ساله با سابقه flulike اخیراً دچار ضعف اندام تحتانی شده است. به تدریج دچار اختلات بلع و تنگی نفس هم گردیده که شدت آن رو به افزایش بوده است. کدام یک از بررسی های انجام شده در بیمار فوق پیش بینی کننده نارسایی تنفسی نیازمند به ساپورت مکانیکال ونتیلاسیون می باشد؟

الف)  $FVC < 1 \text{ Lit}$

ب)  $MIP \leq 40 \text{ cm Hg}$

ج)  $PEF < 60\% \text{ PREDICTED}$

د)  $MEP < 40 \text{ cm Hg}$

Acute immune-mediated polyneuropathy, also referred to as Guillain-Barré syndrome, is a heterogeneous group of diseases now thought to be caused by antiglycolipid antibodies. 29 Acute idiopathic demyelinating polyneuropathy is the most common form, making up about 85–90% of cases. It is an acute progressive process characterized by symmetrical, ascending muscle weakness progressing over a 2-week period and associated with loss of deep tendon reflexes. It is thought that an antecedent viral infection induces an immune response to viral epitopes that then cross-react with lipid components of the peripheral nerve. 30 The process usually starts in the lower extremities but may start primarily in the arms or the face, head, and neck (Miller-Fisher variant). 31 Acute idiopathic demyelinating polyneuropathy affects the respiratory system by causing (1) weakness of the upper airway muscles, (2) weakness of the inspiratory and expiratory muscles, and (3) secondary complications such as pneumonia or pulmonary embolism. 32 Approximately 25–50% of patients develop respiratory insufficiency severe enough to necessitate intubation and mechanical ventilation. 33 A number of variables used to predict impending respiratory failure and the need for mechanical ventilatory support have been used, including FVC, maximal inspiratory pressure (MIP), maximal expiratory pressure (MEP), and nocturnal desaturation.

Generally accepted guidelines for intubation and mechanical ventilation include an FVC less than 15 mL/kg, an FVC less than 1 L, a decline in FVC to 50% or less of the normal predicted value for that individual, or an MIP of 30 cm H<sub>2</sub>O or less. 32 FVC and MIP should be monitored frequently (multiple times per day depending on rapidity of progression). With rapidly progressive disease, the intensive care unit (ICU) is considered the best location for monitoring. Absolute indications for intubation include impaired consciousness, respiratory or cardiac arrest, shock, arrhythmias, blood gas alterations, or bulbar dysfunction with confirmed aspiration. 32 Noninvasive ventilation is generally not an option for these individuals because they are at a high risk for aspiration due to bulbar muscle involvement. Successful extubation may be achieved once treatment such as steroids, immune globulin, and plasmapheresis is begun and respiratory muscle strength returns. 33 Until respiratory muscle strength returns, scrupulous supportive ICU care including tracheostomy for prolonged mechanical ventilation and prophylaxis to prevent deep venous thrombosis is required to prevent complications such as ventilator-associated pneumonia, sepsis, and pulmonary embolism.

Guillain-Barré syndrome, now known as acute idiopathic demyelinating polyneuropathy (AIDP), is an autoimmune polyneuropathy that accounts, together with myasthenia gravis, for the majority of admissions for ventilatory failure due to neuromuscular impairment. 525354555657 Therapy with intravenous immunoglobulin and plasmapheresis improves outcomes in AIDP, although 2–10% still die, and up to 20% of individuals who survive remain seriously disabled. 58 Theoretically, death should be preventable in the vast majority of patients with this disease because mortality is primarily from potentially avoidable respiratory complications (see the discussion in Chapter 130 ). Although the 20/30/40 rule (FVC <20% predicted, maximum inspiratory pressure <30 cm H<sub>2</sub>O, and maximum expiratory pressure <40 cm H<sub>2</sub>O) is still commonly used, prediction of the need for mechanical ventilation can be challenging, especially in patients with swallowing difficulty, and close observation of these patients in an ICU is mandatory.

**در ارتباط با عوارض مواجهه با گاز خردل همه موارد زیر صحیح است، بجز؟**

**الف)** آسم و برونشیت مزمن شایع ترین فرم تظاهر مواجهه است.

**ب)** برونشیولیت ابلیتران جز عوارض دیر رس مواجهه است

**ج)** تنگی برونش های اصلی در این بیماران دیده می شود .

**د)** سرطان ریه در مواجهه با دوز بالای خردل اثبات شده است.

- Largely on the basis of the Iranian experience of their Iraqi war veterans, sulfur mustard survivors can exhibit residual tracheobronchitis, asthma, bronchiectasis, bronchotracheomalacia, BO, and fibrosis.
- Nitrogen mustards were sulfur mustard derivatives originally developed for military purposes but later applied medically; nonetheless, occupationally related acute lung injury has been reported through industrial release.

**تکنیک Pursed Lip Breathing در باز توانی ریه باعث تمامی موارد زیر می شود، بجز؟**

**الف) افزایش حجم جاری (Tidal Volume)**

**ب) کاهش حجم انتهای بازدمی (Endexpiratory Volume)**

**ج) افزایش میزان مصرف اکسیژن (oxygen Cost) عضلات حین تنفس**

**د) افزایش بکارگیری (Recruitment) عضلات بازدمی**

- The goal of breathing training is to reduce air trapping by controlling respiratory rate and breathing pattern. Pursed-lip breathing, performed with patients inhaling through the nose and exhaling through the mouth over 4 to 6 seconds through pursed lips in a whistling/kissing position, facilitates the recruitment of abdominal muscles during exhalation and has a favorable effect on the breathing pattern by increasing tidal volume and reducing end-expiratory lung volumes by increasing expiratory times and stenting collapsible airways with a positive end-expiratory pressure effect.<sup>166</sup> Successful pursed-lip breathing can result in less hypoxemia and decreased dyspnea. In some patients, pursed-lip breathing has also been shown to reduce the oxygen cost of breathing

در رادیوگرافی قفسه صدري يك خانم 60 ساله با BMI=32 تنها بالا زدگی دیافراگم راست مشهود است. در این مرحله تمام بررسی های زیر پیشنهاد می گردد، بجز؟

الف) فلوروسکوپیک Sniff Test

ب) اندازه گیری TSH

ج) MRI قفسه سینه

د) اندازه گیری سطح فولات و Vit B12

Causes of Diaphragm Weakness and Paralysis.

Neuropathic Causes	Myopathic Causes
<p><b>Trauma</b>                      Cardiac surgery with cold cardioplegia                      Blunt trauma                      Spinal cord injury                      Radiation injury                      Cervical manipulation                      Scalene and brachial nerve block                      Tumor compression                      Lung cancer                      Metastatic mediastinal tumor</p> <p><b>Metabolic</b>                      Diabetes                      Vitamin deficiency (B<sub>6</sub>, B<sub>12</sub>, folate)                      Hypothyroidism</p> <p><b>Inflammatory Neuritis</b>                      Idiopathic (neuralgic amyotrophy, Parsonage-Turner)                      Mononeuritis multiplex                      Vasculitis                      Paraneoplastic</p>	<p><b>Muscular Dystrophies</b>                      Limb-girdle                      Duchenne and Becker</p> <p><b>Metabolic Myopathies</b>                      Hyper- or hypothyroidism                      Acid maltase deficiency</p> <p><b>Rheumatologic</b>                      Systemic lupus erythematosus                      Dermatomyositis                      Mixed connective disease</p> <p><b>Miscellaneous</b>                      Amyloidosis                      Malnutrition                      Idiopathic</p>
<p>Miscellaneous</p>	
<p>Cervical spondylosis                      Poliomyelitis                      Amyotrophic lateral sclerosis</p>	

آقای 65 ساله با سابقه پیس میکر در قلب، به علت خلط خونی مراجعه نموده اند رادیوگرافی قفسه سینه توده در ناف ریه راست مشهود است برونکوسکوپی ضایعه داخل برونش اصلی راست مشهود است بیوپسی از ضایعه Endobronchial Papillomatosis گزارش شده است توصیه به ARGON PLASMA COAGULATION شده است. کدامیک از موارد زیر منع استفاده از درمان فوق است؟

سن بالای 60 سال

وجود پیس میکر

ضایعه پاپیلوماتوز

خونریزی سطح ضایعه

Advantages and Disadvantages of Therapeutic Modalities

Modality	Time to Achieve Results	Advantages	Disadvantages	Comments
Electrocautery	Immediate	Inexpensive Multiple accessories	Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Keep F io <sub>2</sub> <0.4
Argon plasma coagulation	Immediate	Inexpensive Can treat at an angle to electrode	Risk for gas embolization with higher flow rates Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Depth of penetration 2–3 mm Keep F io <sub>2</sub> <0.4
Laser photoresection	Immediate	Extensive data supporting its use	Need laser safety precautions	Depth of penetration up to 10 mm Keep F io <sub>2</sub> <0.4
Stent	Immediate	Only bronchoscopic modality for extrinsic compression	All stents have associated complications of granulation tissue formation, infection, and migration	Metallic stents should be used with caution in patients with nonmalignant disease
Microdébrider	Immediate	Can use in high-F io <sub>2</sub> environments Can provide tissue for pathology	May need additional tools to provide hemostasis	Cannot reach distal airways
Cryotherapy	48–72 hr	Normal airway is cryoresistant Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires “cleanout” bronchoscopy	Cryoadhesion can remove organic foreign bodies
Photodynamic therapy	48–72 hr	Can destroy submucosal tumor Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires “cleanout” bronchoscopy Systemic photosensitivity Need laser safety precautions	Swelling of tumor can cause obstruction
Brachytherapy	Delayed: days to weeks	Can destroy submucosal tumor	Coordination with radiation oncology	Radiation bronchitis Risk for erosion into vessels Swelling of tumor can cause obstruction

**۲- در مورد اثرکورتیکواستروئید در رشد و تکامل ریه تمام عبارات زیر صحیح است، بجز:**

تجویز آن باعث بهبودی در تولید سورفاکتانت ریوی می‌شود.

در زایمان زودرس، تجویز آن به مادر خطر سندروم زجر تنفسی نوزاد را کم می‌کند.

تجویز آن پس از تولد باعث اختلال در تکامل ریه می‌شود.

در بهبودی Bronchopulmonary Dysplasia نوزاد زودرس موثر است.

- Surfactant production is a key developmental milestone that impacts the survival of premature infants and can be enhanced in utero by the administration of steroids.
- Perhaps the most significant cause of impaired lung development is preterm birth, or birth before 37 weeks of gestation, which complicates 10% of all pregnancies. 125 Infants who are born prematurely are exposed to multiple treatments, including steroids, positive-pressure ventilation, and supplemental oxygen, treatments that improve survival but come at the cost of limiting normal development during the sacular and alveolar stages. The infants who are most commonly and severely affected are those born extremely preterm, or before 28 weeks of gestation. These infants have a high incidence of persistent respiratory distress throughout the newborn period. Preterm infants who require treatment with supplemental oxygen and/or positive-pressure ventilation beyond 36 weeks corrected gestational age are given the diagnosis of BPD. 126 Premature arrest of lung development in these infants is often made worse by inadequate nutrition, recurrent lung infection, and other cardiovascular and inflammatory insults. 126 Despite the association between preterm birth and BPD, the disease itself is very heterogeneous, and it is unclear what treatments improve the outcome. What is clear is that as more and more preterm infants are surviving and technical advances, such as surfactant therapy and better controlled ventilation, have permitted improved survival for infants born at even earlier gestational ages (<24 weeks), care for this group of patients will require specialized management throughout their lifetime.

۴- واکسن زنده آنفولانزا در کدام گروه ایمنی زایی کمتری دارد؟

کودک 6 ساله بدون بیماری زمینه ای

آقای 70 ساله بدون بیماری زمینه ای

آقای 47 ساله با پرولاپس دریچه میترال

خانم 38 ساله باشکستگی قاعده جمجه

Trade Name	Age Indication	Antigen Amount per Vaccine Dose (HA Concentration in IIVs and RIV4) or Virus Count (LAIV4) (Each Vaccine Virus)	Production System	Adjuvant	Route
<b>Quadrivalent * IIV (IIV4): Standard Dose, Contains Inactivated Virus</b>					
Afluria Quadrivalent	≥6 mo	7.5 µg/0.25 mL (for <3 years) 15 µg/0.5 mL (for ≥3 years)	Egg	No	IM
Fluarix Quadrivalent	≥6 mo	15 µg/0.5 mL	Egg	No	IM
Flulaval Quadrivalent	≥6 mo	15 µg/0.5 mL	Egg	No	IM
Fluzone Quadrivalent	≥6 mo	7.5 µg/0.25 mL (for <3 yr) 15 µg/0.5 mL (for any age)	Egg	No	IM
Flucelvax Quadrivalent	≥4 yr	15 µg/0.5 mL	Cell culture	No	IM
Trivalent † IIV3: High Dose, Contains Inactivated Virus					
Fluzone High Dose †	≥65 yr	60 µg/0.5 mL	Egg	No	IM
Trivalent † IIV3: Adjuvanted, Contains Inactivated Virus					
Fluad †	≥65 yr	15 µg/0.5 mL	Egg	Yes (MF59)	IM
Quadrivalent * RIV (RIV4): Contains Recombinant HA					
Flublok Quadrivalent	≥18 yr	45 µg/0.5 mL	Recombinant	No	IM
Quadrivalent * LAIV (LAIV4): Contains Live, Attenuated, Cold-Adapted Virus					
FluMist Quadrivalent	2–49 yr	10 <sup>6.5–7.5</sup> fluorescent focus units/0.2 mL	Egg	No	NAS

# Risk factors

---

## Health Risk Factors

Asthma

Neurologic and neurodevelopment conditions

Blood disorders, such as sickle cell disease

Chronic lung disease, such as COPD and cystic fibrosis

Endocrine disorders, such as diabetes mellitus

Heart disease, such as congenital heart disease, congestive heart failure, and coronary artery disease

Kidney disorders

Liver disorders

Metabolic disorders, such as inherited metabolic disorders and mitochondrial disorders

Obesity with a body mass index of  $\geq 40$

Age <19 years on long-term aspirin- or salicylate-containing medications

A weakened immune system due to disease, such as people with HIV or AIDS, or some cancers, such as leukemia; taking medications, such as those receiving chemotherapy or radiation treatment for cancer; or persons with chronic conditions requiring chronic corticosteroids or other drugs that suppress the immune system

---

## Other High-Risk Groups

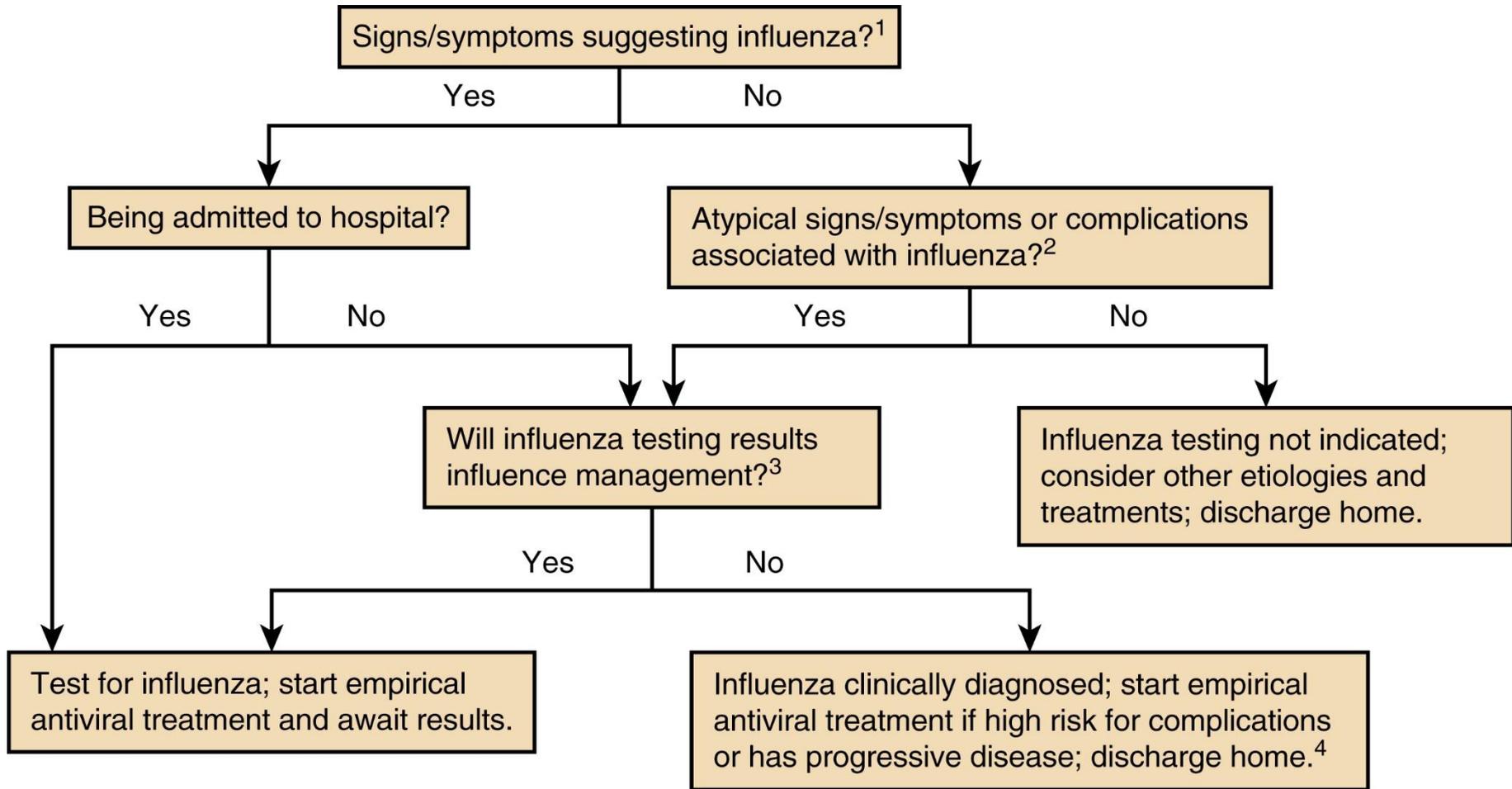
Adults  $\geq 65$  years

Children <2 years

Pregnant women and women up to 2 weeks after the end of pregnancy

Native Americans, including Alaska Natives

People who live in nursing homes and other long-term care facilities



- 1, Signs and symptoms may include fever with cough or other suggestive respiratory symptoms, often with myalgias or headache. Note that some individuals, especially older adults, infants, and immunocompromised, may have atypical presentations, including a lack of fever.
- 2, Atypical signs and symptoms may include unexplained fever only or lack of fever with any respiratory symptoms, especially in immunocompromised or high-risk patients. Complications associated with influenza include pneumonia or exacerbation of chronic conditions, such as asthma, COPD, or heart failure.
- 3, Influenza testing may be used to guide decisions on use of antibiotics or continuation of antiviral medication, on need for further diagnostic tests, on consideration for home care, or on recommendations for ill persons living with others who are at high risk for influenza complications. Influenza testing may be required to guide decisions on infection control practices.
- 4, Antiviral treatment is recommended for outpatients with suspected influenza who are at high risk for complications from influenza or those with progressive disease not requiring hospital admission. Antiviral treatment of outpatients who are not at high risk for influenza complications can be considered based upon clinical judgment if presenting within 2 days of illness onset.

۵- کدامیک از عوامل زیر سهم بیشتری در مقاومت دستگاه تنفسی دارد؟

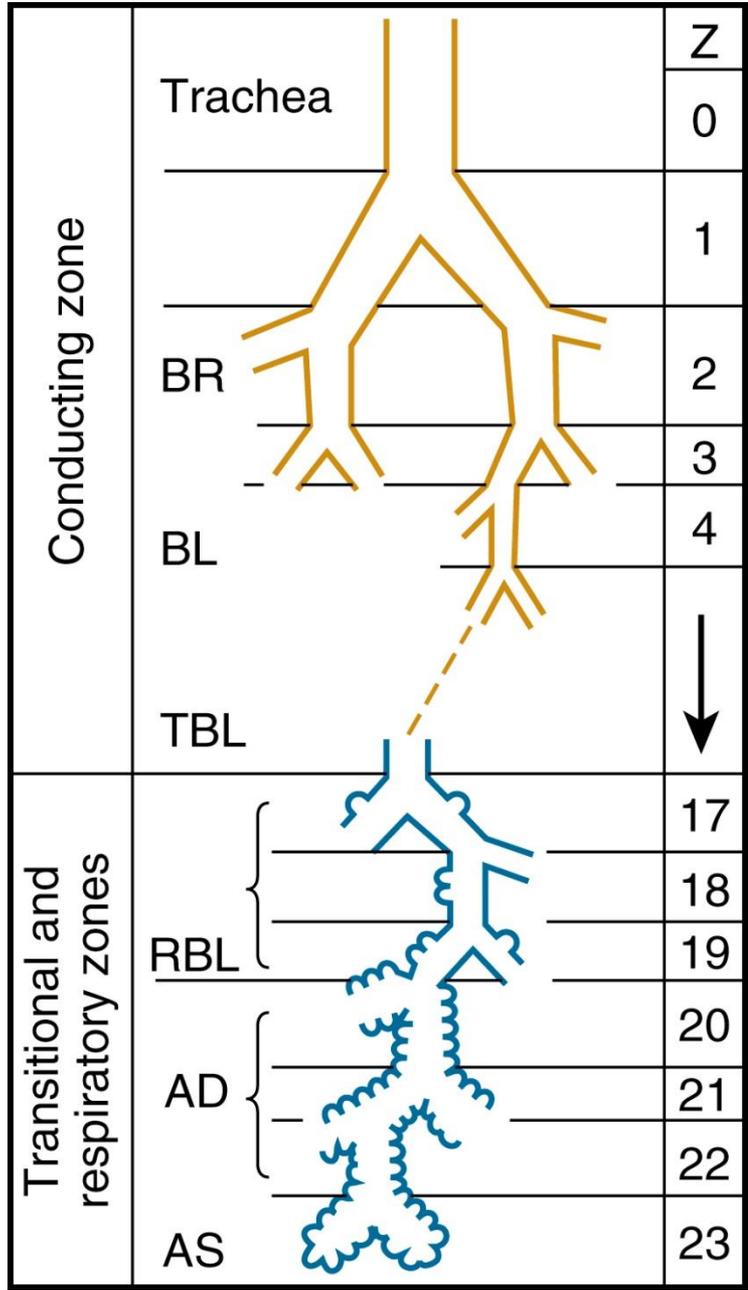
Chest wall

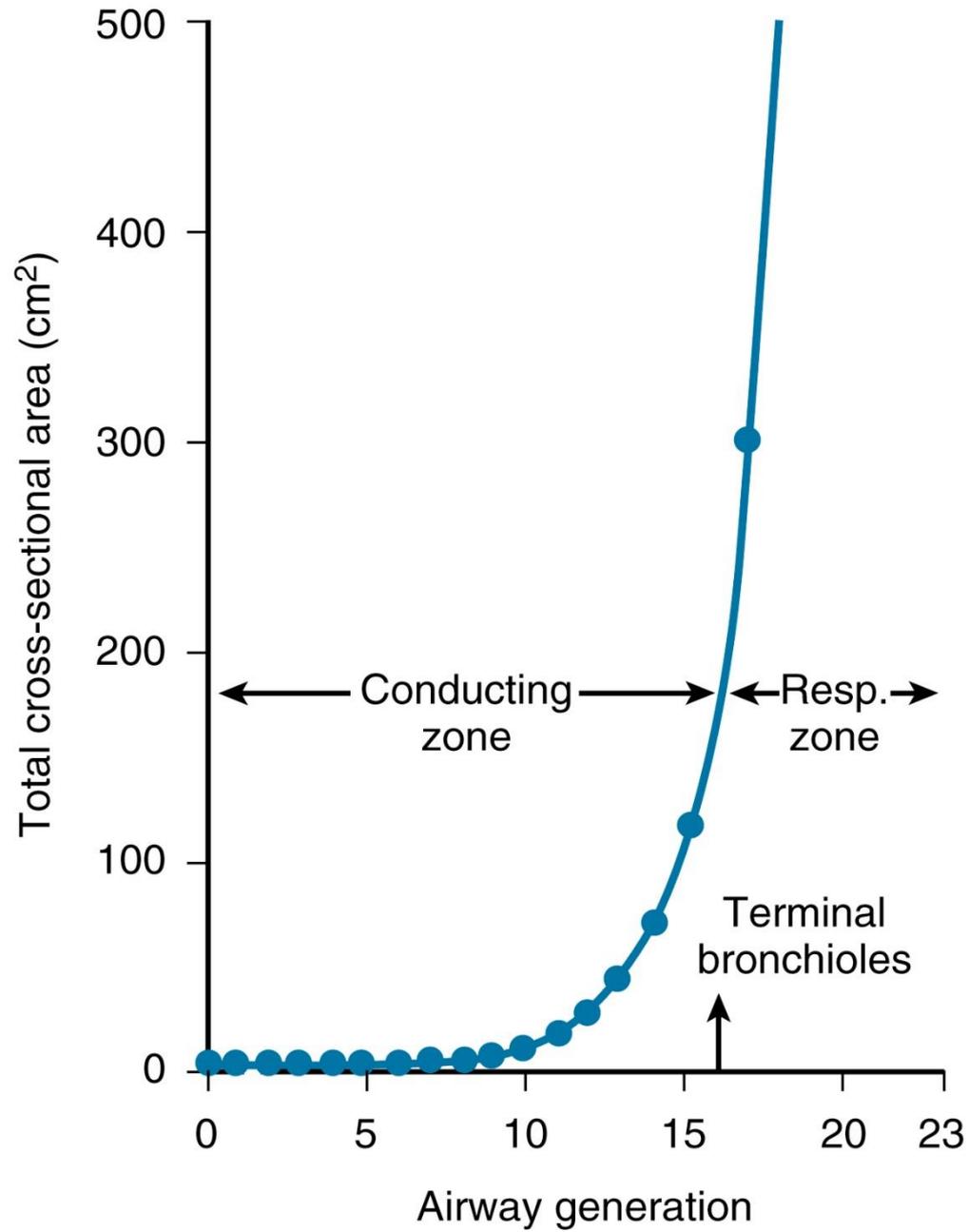
Lung tissue

Small airways

Large airways

Modeling total airway resistance reveals that, based on total cross sectional areas at each airway generation, airway resistance initially falls from the trachea to generation 4, then rises again in generations 5–8, before falling off dramatically in subsequent generations<sup>12</sup> (Fig. 2). At breathing frequencies, small airways (< 2 mm in diameter) account for only 10% of total airway resistance,<sup>14-16</sup> with the remainder arising from the viscoelastic properties of the lung parenchymal tissue (40%) and flow resistance in the larger airways (50%).<sup>17</sup>





بیمار آقای 63 ساله با سابقه هیپرتانسیون به علت درد شکم و تهوع و استفراغ از 2 روز قبل بستری می‌شود. در معاینه بیمار تب 38.5 درجه دارد. فشار خون 80/50 دارد. معاینه شکم تندر نس منتشر دارد و سمع شکم صدایی شنیده نمی‌شود. گرافی شکم Ileus مشاهده می‌شود. آزمایشات انجام شده به شرح ذیل می‌باشد:

Na: 140 meq/L, K: 4.5 meq/L, Cl: 80 meq/L, HCO<sub>3</sub>: 25, PH: 7.4, PCO<sub>2</sub>: 40 mmhg

با توجه به موارد فوق کدام مورد ذیل برای بیمار مطرح می‌باشد؟

اختلالی وجود ندارد

اسیدوز متابولیک و آلکالوز تنفسی

اسیدوز متابولیک و آلکالوز متابولیک

اسیدوز تنفسی و اسیدوز متابولیک

Step ③ Compensation

metabolic Acidosis  $\rightarrow (1.5 [HCO_3] + 8) \pm 2 : PCO_2$

metabolic Alkalosis  $\rightarrow [HCO_3^+] + 15$

Respiratory Acidosis  $\left\{ \begin{array}{l} \text{Acute} \quad \uparrow PCO_2 (10) \rightarrow \uparrow (HCO_3) 1 \\ \text{chronic} \quad \uparrow PCO_2 (10) \rightarrow \uparrow (HCO_3) 4 \end{array} \right.$

Respiratory Alkalosis  $\left\{ \begin{array}{l} \text{Acute} \quad \downarrow PCO_2 (10) \rightarrow \downarrow (HCO_3) 2 \\ \text{chronic} \quad \downarrow PCO_2 (10) \rightarrow \downarrow (HCO_3) 4 \end{array} \right.$

Step ④ Anion Gap normal: 10

$$\boxed{Na - (Cl + HCO_3)}$$

HAGMA

$\frac{\Delta AG}{\Delta HCO_3} > 2 \rightarrow$  Coexistence of metabolic alkalosis

$\frac{\Delta AG}{\Delta HCO_3} < 1 \rightarrow$  Coexistence of metabolic acidosis

Step ⑤ Osmolality

$$2Na + \frac{\text{Glucose}}{18} + \frac{BUN}{2.8}$$

Normal: 275 - 290

effective Osmole

$\downarrow$   
Na

$$AG = Na - (Cl + HCO_3)$$

$$AG = 140 - (80 + 25) = 35 \uparrow$$

metabolic acidosis (HAGMA)

$$[1.5 (HCO_3) + 8] \pm 2$$

$$[1.5 \times 25 + 8] \pm 2 = \frac{43.5 - 47.5}{?}$$

$$\frac{\Delta AG}{\Delta HCO_3} = \frac{35 - 10}{25 - 24} = \frac{25}{1} > 2$$

metabolic alkalosis

همه عوامل زیر با تحریک Epidemal Growth Factor Receptor باعث تحریک ترشح موسین در مجاری هوایی می‌شوند، بجز:

مصرف کورتیکواستروئید

دود سیگار

T helper cells

*Pseudomonas aeruginosa* supernatant

- Current evidence suggests that epidermal growth factor receptor signaling is a parallel pathway involved in mucin overproduction. Epidermal growth factor receptor signaling is necessary for MUC5AC induction in a wide range of settings, including cigarette smoke exposure, viral infection, bacterial infection, and both innate and adaptive immune response signals.

مردی 60 ساله با سابقه بیماری قلبی و pace-maker که از یکسال قبل استنت فلزی در برنش اصلی ریه چپ دارد بدلیل تنگی نفس و هیپوکسمی مراجعه می کند با 4 لیتر اکسیژن  $O_2\text{sat}:86\%$  می شود در بررسی انجام شده متوجه انسداد استنت بدلیل گرانولوما می شویم کدام اقدام درمانی مناسبتر می باشد؟

Photodynamic therapy

Cryotherapy

Argon Plasma Coagulation

Laser Photoresection

Advantages and Disadvantages of Therapeutic Modalities

Modality	Time to Achieve Results	Advantages	Disadvantages	Comments
Electrocautery	Immediate	Inexpensive Multiple accessories	Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Keep F io <sub>2</sub> <0.4
Argon plasma coagulation	Immediate	Inexpensive Can treat at an angle to electrode	Risk for gas embolization with higher flow rates Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Depth of penetration 2–3 mm Keep F io <sub>2</sub> <0.4
Laser photoresection	Immediate	Extensive data supporting its use	Need laser safety precautions	Depth of penetration up to 10 mm Keep F io <sub>2</sub> <0.4
Stent	Immediate	Only bronchoscopic modality for extrinsic compression	All stents have associated complications of granulation tissue formation, infection, and migration	Metallic stents should be used with caution in patients with nonmalignant disease
Microdébrider	Immediate	Can use in high-F io <sub>2</sub> environments Can provide tissue for pathology	May need additional tools to provide hemostasis	Cannot reach distal airways
Cryotherapy	48–72 hr	Normal airway is cryoresistant Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires "cleanout" bronchoscopy	Cryoadhesion can remove organic foreign bodies
Photodynamic therapy	48–72 hr	Can destroy submucosal tumor Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires "cleanout" bronchoscopy Systemic photosensitivity Need laser safety precautions	Swelling of tumor can cause obstruction
Brachytherapy	Delayed: days to weeks	Can destroy submucosal tumor	Coordination with radiation oncology	Radiation bronchitis Risk for erosion into vessels Swelling of tumor can cause obstruction

- در یک خانم 65 ساله که با تنگی نفس مراجعه کرده است یافته‌های زیر در تست تنفسی گزارش شده است.

**FVC=75% predicted; FEV1/FVC=82%, TLC=73% predicted, RV/TLC= 25% ; MEP=80% predicted**

با کدامیک از تشخیص‌های زیر بیشتر منطبق است؟

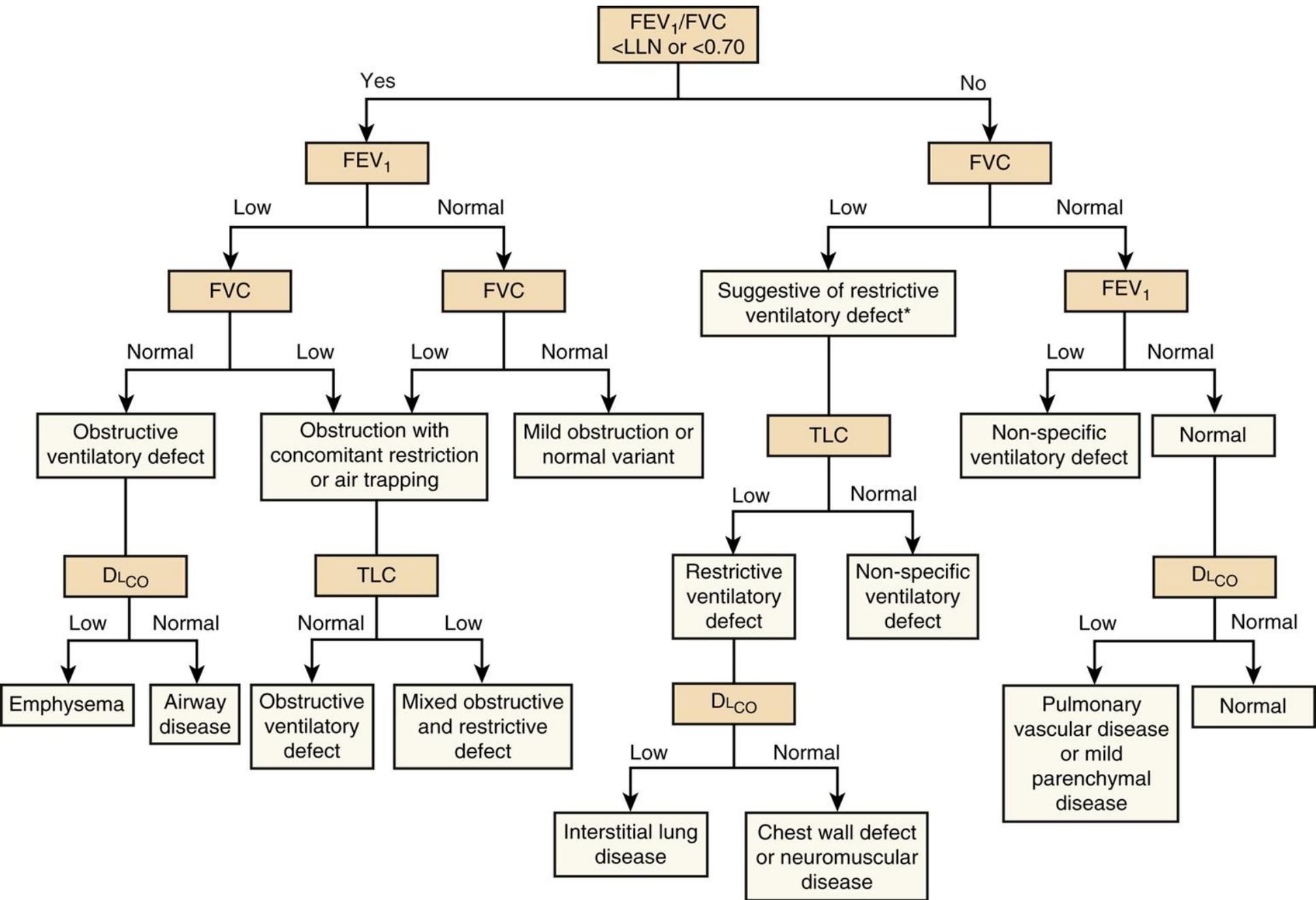
کیفواسکولیوز

بیماری نوروماسکولر

بیماری عروق ریوی

نارسایی قلبی





نمای غالب در بیماران مبتلا به دیستروفی عضلانی و نارسایی تنفسی هیپرکاپنیک مزمن کدام گزینه است؟

کاهش  $PO_2$  آلوئولار و گرادیان نرمال اکسیژن آلوئولی-شریانی

کاهش  $PO_2$  آلوئولار و افزایش گرادیان اکسیژن آلوئولی-شریانی

$PO_2$  آلوئولار نرمال و گرادیان نرمال اکسیژن آلوئولی-شریانی

$PO_2$  آلوئولار نرمال و افزایش گرادیان اکسیژن آلوئولی-شریانی

<b>Mechanism of Hypoxemia</b>	<b>(A-a)P<sub>o2</sub></b>	<b>Response of Arterial P<sub>o2</sub> to Increase in F<sub>io2</sub></b>
Low ventilation-perfusion	Increased	Improves
Shunt	Increased	Minimal improvement
Diffusion limitation	Increased	Improves
Hypercarbia	Normal	Improves
Decreased P <sub>io2</sub>	Normal	Improves

- With a decrease in ventilation, there is a reduction in alveolar  $P_{O_2}$ . Using the alveolar gas equation, one can calculate the change in  $P_{O_2}$  from the change in  $P_{CO_2}$  during pure hypoventilation or hyperventilation (i.e., without a change in venous admixture). In general, if the other factors of the alveolar gas equation remain constant (e.g., barometric pressure,  $F_{IO_2}$ , the  $(A - a)P_{O_2}$ ), the change in  $P_{O_2}$  is reflected by a change ( $\Delta$ ) in  $P_{CO_2}$ , as follows:  $\Delta P_{O_2} = -\Delta P_{CO_2} / R$ . If the  $R$  is assumed to be 0.8, the equation can be written so that a change in  $P_{O_2}$  is equal but opposite to the change in  $P_{CO_2} \times 1.25$ . Thus, when all factors mentioned are constant, if the  $P_{CO_2}$  goes up by 10 mm Hg, the  $P_{O_2}$  goes down by 12.5 mm Hg.

۲۲- مرد ۶۰ ساله‌ای بدون سابقه سیگار کشیدن از چند سال قبل دچار تنگی نفس شده است. در اکوکاردیوگرافی EF برابر ۳۵ درصد گزارش شده است. در تست فعالیت ریوی کدامیک از یافته‌های زیر کمتر احتمال دارد در او دیده شود؟

افزایش  $\dot{V}E/\dot{V}CO_2$  در نقطه‌ی ventilatory threshold

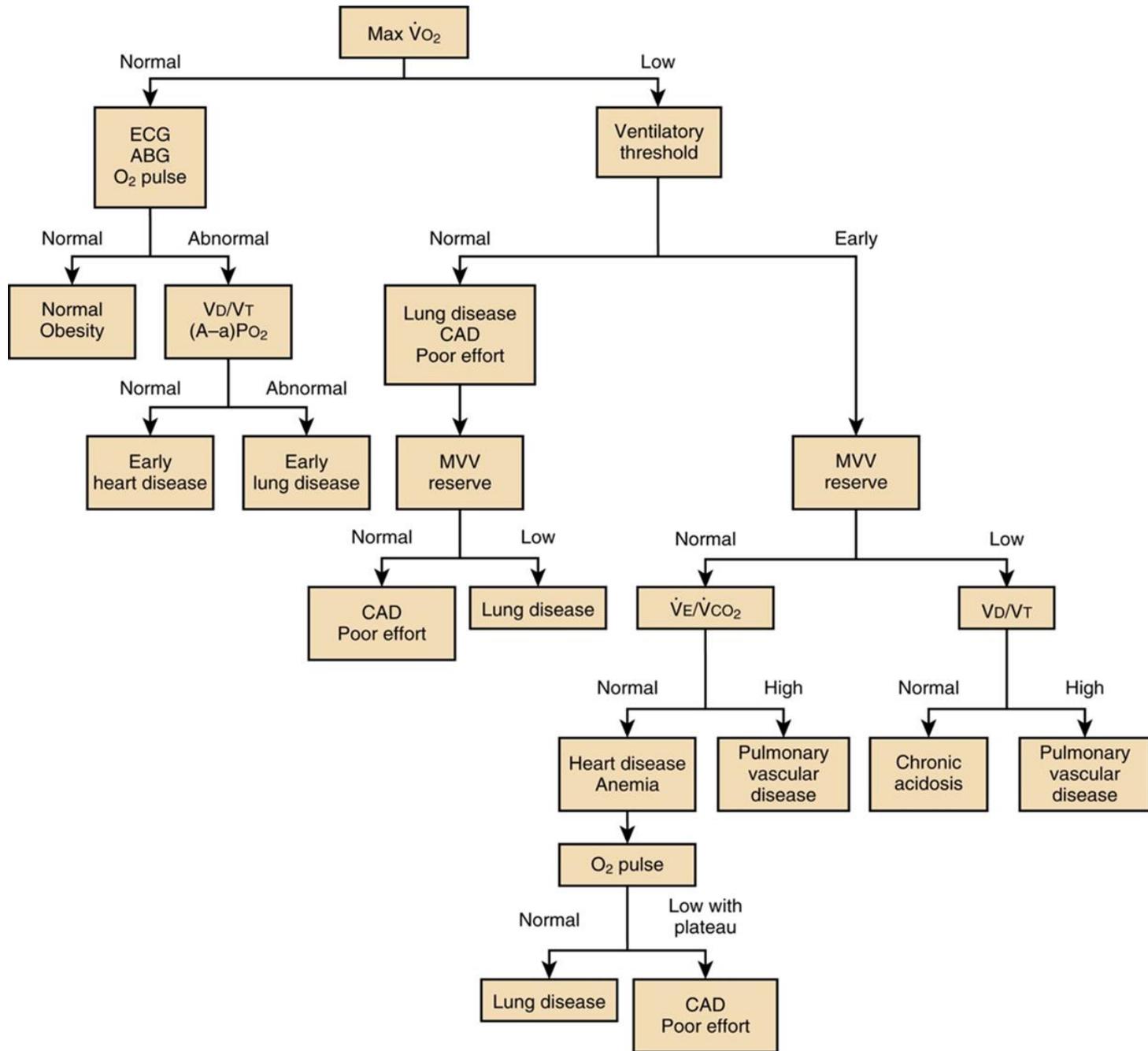
افزایش  $A - a DO_2$

کاهش  $\dot{V}O_2 \max$

کاهش  $\bar{V}O_2/HR$

**TABLE 18. USUAL CARDIOPULMONARY EXERCISE RESPONSE PATTERNS**

Measurement	Heart Failure	COPD	ILD	Pulmonary Vascular Disease	Obesity	Deconditioned
$\dot{V}_{O_2}$ max or $\dot{V}_{O_2}$ peak	Decreased	Decreased	Decreased	Decreased	Decreased for actual, normal for ideal weight	Decreased
Anaerobic threshold	Decreased	Normal/decreased/indeterminate	Normal or decreased	Decreased	Normal	Normal or decreased
Peak HR	Variable, usually normal in mild	Decreased, normal in mild	Decreased	Normal/slightly decreased	Normal/slightly decreased	Normal/slightly decreased
$O_2$ pulse	Decreased	Normal or decreased	Normal or decreased	Decreased	Normal	Decreased
$(\dot{V}_E/MVV) \times 100$	Normal or decreased	Increased	Normal or increased	Normal	Normal or increased	Normal
$\dot{V}_E/\dot{V}_{CO_2}$ (at AT)	Increased	Increased	Increased	Increased	Normal	Normal
$V_D/V_T$	Increased	Increased	Increased	Increased	Normal	Normal
$Pa_{O_2}$	Normal	Variable	Decreased	Decreased	Normal/may increase	Normal
$P(A-a)O_2$	Usually normal	Variable, usually increased	Increased	Increased	May decrease	Normal



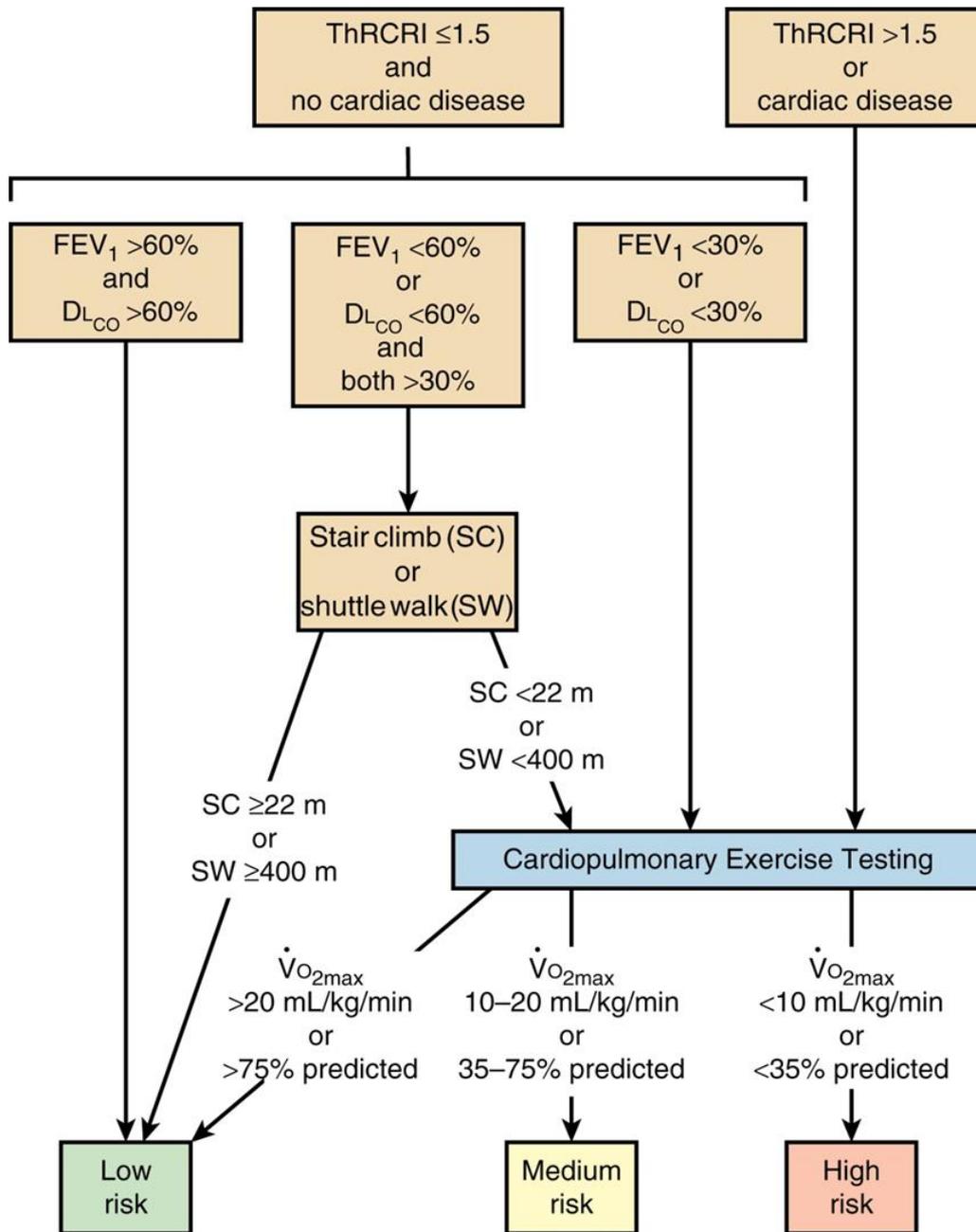
۲۳- مردی 50 ساله با سابقه 30 P/Y مصرف سیگار با تشخیص NSCC کاندید لوبکتومی RLL می‌باشد در بررسیهای قبل از عمل مشخص شده:  
PPO FEV1=40% PPO DLCO=25% است با توجه به این نتایج کدامیک از جملات زیر صحیح است؟

لوبکتومی در این بیمار مجاز است

در این مرحله پس از انجام بازتوانی لوبکتومی مجاز است

اندازه گیری VO2 max باید انجام شود

لوبکتومی در این بیمار نباید انجام شود



۲۴- بیمار جوان 35 ساله‌ای است که در سوریه در عملیات علیه داعش حضور داشته است و در حین رزم متوجه کاربرد سلاح شیمیایی شده است ولی نوع آن را نمی‌داند. همزمان علائم خاص نداشته است ولی اکنون از تنگی نفس حین فعالیت شاکی است او مایل است درمان شود و به فعالیت خود ادامه دهد. بررسی گرافی قفسه سینه و اسپرومتری و معاینه طبیعی است. اقدام مناسب بعدی در این بیمار کدام است؟

تمارض می‌کند و اقدام بعدی نیاز ندارد.

تست ورزش قلبی- ریوی انجام می‌دهیم.

به بیمار اطمینان می‌دهیم که هیچ مشکلی ندارد.

اضطرابی است، به روانپزشک ارجاع می‌دهیم.

## Evaluating Dyspnea:

When the cause of dyspnea is not apparent from history, physical examination, laboratory testing (including a hemoglobin and resting arterial blood gas), chest imaging, and PFTs, CPET can be used to (1) quantify a patient's exercise limitation and (2) determine the system limiting exercise.

Although CPET can narrow the differential list down to a single limiting system, such as in patients with chronotropic incompetence or myocardial ischemia, it is most useful in identifying the best avenue of investigation in making a definitive diagnosis.

The first step in using CPET to evaluate dyspnea is to determine if the patient's subjective description of his or her limitations are aligned with the ability to do work. It is therefore imperative that the patient gives a maximal effort during the CPET. An arterial blood gas at the end of exercise can be very helpful to determine whether the individual gave a good effort, was limited by ventilation, had excess dead space, or was hyperventilating. It is also important to ask the patient if the CPET reproduced their symptoms. In a group of 50 patients referred for CPET with unexplained dyspnea, 129 for example, broad diagnoses of cardiac limitation, pulmonary limitation, obesity and/or deconditioning, and psychogenic dyspnea were identified.

برای تمامی موارد عفونت‌های زیر که در حملات Bioterrorism دخیل هستند الزام به استفاده از ماسک N95 برای Baseline Protection وجود دارد، بجز:

Viral hemorrhagic Fever

Smallpox

Plague

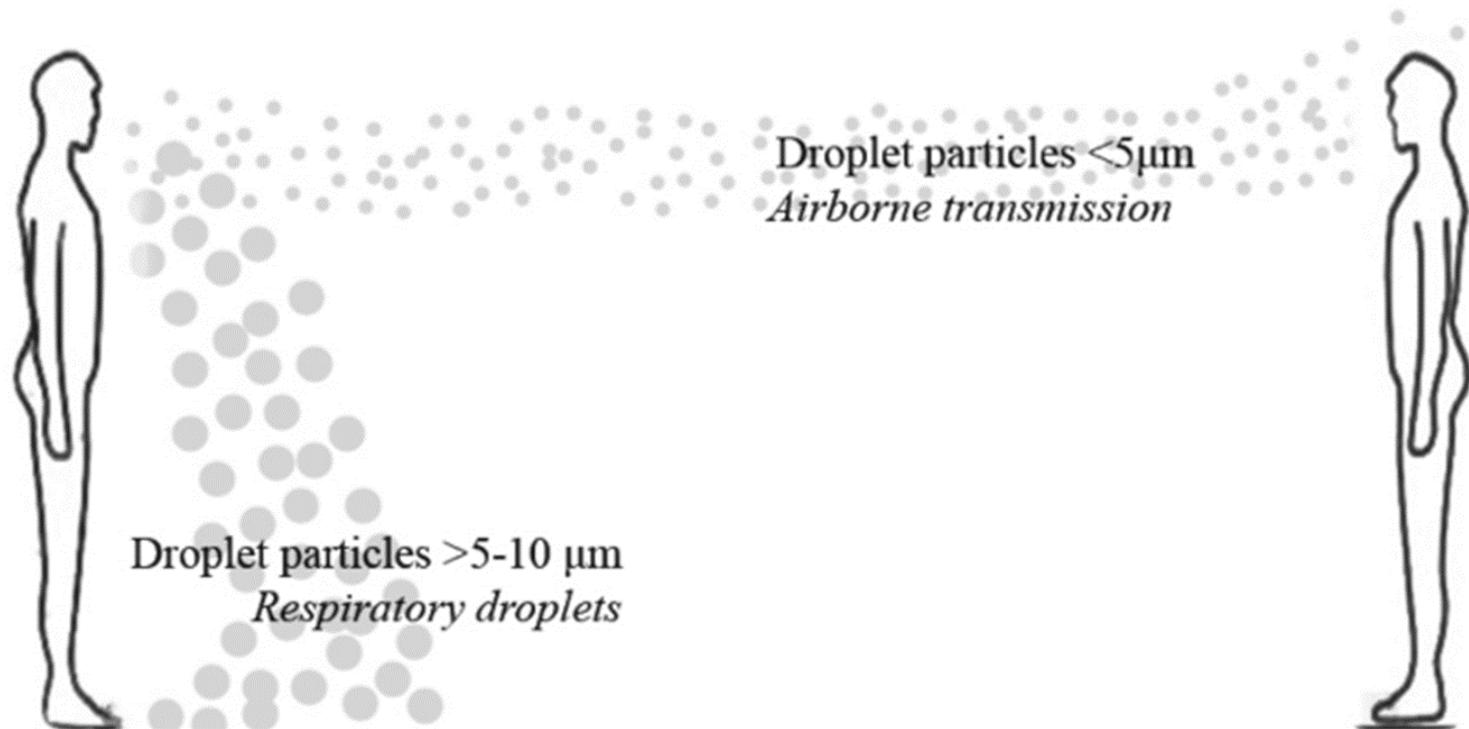
Anthrax

Disease	Signs and Symptoms	Incubation Time (Range)	Person-to-Person Transmission	Isolation	Diagnosis *	Postexposure Prophylaxis	Treatment †
<b>Anthrax</b> ( <i>Bacillus anthracis</i> )							
Inhalation	Flu-like symptoms including fever and chills, shortness of breath, cough, sweats, fatigue, and myalgias May also have confusion, headache, nausea, vomiting or stomach pain	1–43 days (range, up to 60 days)	None	Standard	CXR with widened mediastinum; cultures of sputum and blood	Antibiotics, vaccine	Antibiotics, antitoxin
Cutaneous	Initially a group of small blisters or bumps that may itch Swelling may develop around the sore; blisters develop into a painless skin sore (ulcer) with a necrotic (black) center; lesions most commonly on face, neck, arms, or hands	5–7 days (range, 1–12 days)	Rarely	Contact	Cultures of blood and lesion (swab)		
Gastrointestinal	Fever and chills, lymphadenopathy (neck), pharyngitis, dysphagia, nausea and vomiting (may be bloody), diarrhea, headache, abdominal pain, and flushing and conjunctivitis	1–6 days	None	Standard	Cultures of blood and stool		
Botulism ( <i>Clostridium botulinum</i> toxin) via inhalation	Double or blurred vision, ptosis, dysarthria, dysphagia, dysphonia, shortness of breath, dry mouth, muscle weakness; ascending flaccid paralysis Suggested by absence of fever, symmetrical neurologic deficits, patient responsive, normal or slow heart rate with normal blood pressure, and no sensory deficits with exception of blurred vision	12–72 hours (2 hours to 8 days)	None	Standard	Presumptive based on clinical findings Identification of toxin in serum, stool, or vomitus Culture of stool, wound, or food source	None	Antitoxin, botulinum immune globulin
Pneumonic plague ( <i>Yersinia pestis</i> )	Fever, headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery mucus Septicemic plague may develop	1–4 days	Via respiratory droplets	Droplet	Cultures of blood (usually positive), sputum, bronchial washings	Antibiotics	Antibiotics
Smallpox (Variola)	Initial stage (2–4 days): high fever, prostration, myalgias, vomiting Rash: starts as small red spots on tongue and in mouth, changes to sores that rupture, then rash on face that spreads to arms and legs, and then to hands and feet	10–14 days (range, 7–19 days)	Via airborne spread	Contact, airborne (special precautions required) †	PCR of clinical specimens (i.e., skin lesions, NP swab, blood), isolation of small virus, serology **	Vaccine	Vaccine, tecovirimat
Pneumonic tularemia ( <i>Francisella tularensis</i> )	Cough, chest pain, shortness of breath	3–5 days (range, 1–14 days)	None	Standard	Culture of skin lesions (swab or scrapings), lymph node (aspirate or biopsy), pharynx (swab), or sputum	Antibiotics	Antibiotics
VHF †: Ebola virus	Fever, severe headache, myalgias, weakness, fatigue, diarrhea, vomiting, abdominal pain, unexplained hemorrhage (bleeding or bruising)	8–10 days (range, 2–21 days)	Via direct or indirect contact	Contact (special precautions required) †	PCR of clinical specimens (blood) **	Vaccine †	Supportive, monoclonal antibodies for Ebola Zaire
VHF †: Marburg	Sudden onset of fever, chills, headache, myalgias Around fifth day after onset of symptoms, maculopapular rash on trunk; then nausea, vomiting, chest pain, pharyngitis, abdominal pain, diarrhea May progress with jaundice, delirium, shock, liver failure, massive hemorrhage, and multiorgan dysfunction	5–10 days	Via direct or indirect contact	Contact (special precautions required) †	PCR of blood or tissue, ELISA and IgM-capture ELISA **	None	Supportive
VHF †: Lassa	Mild disease: slight fever, malaise, weakness and headache Serious disease: hemorrhage (gums, eyes, nose), respiratory distress, vomiting, pain in chest and abdomen, and shock	6–21 days	Via direct or indirect contact	Contact (special precautions required) †	ELISA (IgM, IgG), RT-PCR of clinical specimens, viral culture **	Antivirals	Ribavirin

- Standard precautions should be followed for the care of all patients;
- They include:
  1. hand hygiene before and after every patient contact,
  2. use of gloves, gowns, and eye protection (for situations in which exposure to body fluids is possible)
  3. use of respiratory hygiene/cough etiquette
  4. safe disposal of sharp instruments in impervious containers

- Three isolation categories reflect the major modes of pathogen transmission in nosocomial settings:
  - Contact
  - Droplet
  - airborne

*In airborne transmission, microorganism in droplet nuclei that is  $<5\mu\text{m}$  in diameter, dispersed hundreds of meters in the air.*



۴۵- خانم ۳۵ ساله‌ای با سرفه و دفع خلط از کودکی مراجعه کرده است. در معاینه کراکل‌های ریه طرف راست و در جلو شنیده می‌شود. CT اسکن ریه امسال و ده سال قبل فقط آتلکتازی در لوب میانی ریه‌ی راست را نشان می‌دهد. در برونکوسکوپی ضایعه انسدادی در برونش دیده نمی‌شود. کدامیک از عبارات زیر در این بیمار صحیح است؟

بررسی جامع از نظر آنتی‌بادی‌ها و ایمنی سلولی و فلوسایتومتری انجام شود.

تهویه کلاترال لوب میانی ریه راست در این بیمار دچار مشکل است.

این حالت اکثراً به علت جسم خارجی در برونش بوده که به خودی خود دفع شده است.

این حالت اکثراً به علت سل زمان کودکی بوده که بهبود یافته است.



۶۱- آقای 51 ساله غیر سیگاری با تنگی نفس از یک سال قبل که تدریجاً پیشرونده بوده، مراجعه کرده است. بیمار در جواهر سازی و تراش الماس کار می‌کند. در CT قفسه سینه گراند گلاس اپاسیتی و افزایش ضخامت بافت بینابینی و در بیوپسی ریه هم فیبروز بینابینی و گرانولوم‌های مولتی نوکلئرمشاهده می‌شود. یافته‌های فوق ناشی از واکنش افزایش حساسیت به کدامیک از موارد زیر است؟

بریلیوم

کبالت

فلزات سنگین

الومینیوم

- Chronic beryllium disease (CBD) is a multisystem disorder characterized by the formation of noncaseating granulomas throughout the body, although their primary manifestation is in the lung. 183 On pathologic examination, CBD is characterized by the presence of a lymphocytic (helper/inducer T cells) alveolitis, as well as of noncaseating epithelioid granulomas indistinguishable from those of sarcoidosis ( eFig. 101.16 ). There is a variable amount of fibroblastic activity that progresses to interstitial fibrosis as the lesions mature. Granulomatous lesions may occasionally be found in other sites, including thoracic and abdominal lymph nodes, spleen, liver, kidneys, and adrenal glands.
- Beryllium enters the body by inhalation and, occasionally, through the skin, where it acts as a specific antigen, alone or as a hapten. Subsequently, beryllium-specific CD4 + lymphocytes proliferate and release lymphokines. There is a wide range in the reported prevalence of beryllium sensitization, from less than 1% to as high as 20% of exposed individuals, 186 and this range appears to be related to the level of beryllium exposure. Progression to CBD develops in a smaller number of sensitized individuals, 6–8% in some studies, with the highest risk in the first few years after exposure. 187 , 188 Because the agent persists in the lung, its slow release over time explains the appearance and progression of disease, even without further exposure. 27 There is evidence for an underlying genetic basis for susceptibility to beryllium disease, linked to a major histocompatibility complex class II marker (human leukocyte antigen DPβ-1 Glu69 ) carrier status. A review of the immunology and genetic susceptibility summarizes current understanding of these complex gene-environment interactions.

- Evidence for delayed hypersensitivity to beryllium may be assessed by the in vitro beryllium lymphocyte proliferation test (BeLPT) on lymphocytes from blood or BAL fluid. 196 , 197 Diagnosis of beryllium sensitization or beryllium-related lung disease requires demonstration of a beryllium-specific immune response, which is confirmed by one of the following: two abnormal peripheral blood BeLPT results, one abnormal and one borderline peripheral blood BeLPT result, one abnormal BAL BeLPT result, or a positive skin patch test result. 193 The BeLPT has allowed for the introduction of three categories of beryllium-associated disorders: beryllium sensitization (positive BeLPT result with negative biopsy or absence of clinical or radiologic features of beryllium-related lung disease), subclinical beryllium disease (positive BeLPT result and biopsy without clinical or radiologic features of the disease), and CBD (positive BeLPT result and biopsy with clinical and radiologic features of disease). 198
- Despite the generally lower beryllium exposures since the 1950s and its decreasing frequency, CBD should remain in the differential diagnosis of sarcoidosis because of the long latency time of disease. Clusters of suspected sarcoidosis in a workplace should alert the clinician to the possibility that these represent examples of CBD. In this context, note should be made of the wide range of occupations associated with potential exposure to beryllium. Additionally, beryllium is considered a human carcinogen, especially in the presence of beryllium lung disease; in 1993, the International Agency for Research on Cancer classified beryllium as a class 1 human carcinogen. 199
- The most important step in case management in the setting of beryllium sensitization is to consider complete cessation of further exposure to beryllium because of the risk of progression to CBD. Regular medical surveillance is indicated in these individuals. There is limited evidence that CBD will improve with removal of the worker from additional beryllium exposure. 193 Although there is no randomized clinical trial to evaluate this treatment, corticosteroid therapy has been recommended in CBD, 200 initiated on the basis of symptoms, imaging, and pulmonary function test results. Long-term steroid therapy is believed to alter the course of the disease favorably. 193 A small trial with infliximab showed improvement in immune response, quality of life, and a trend toward improved D I CO in the subgroup of patients with low D I CO at baseline.

Histologic Patterns	Clinical Associations
Usual interstitial pneumonia	Idiopathic pulmonary fibrosis; connective tissue diseases (uncommon); asbestosis; hypersensitivity pneumonitis; chronic aspiration pneumonia; chronic radiation pneumonitis; Hermansky-Pudlak syndrome; neurofibromatosis
Nonspecific interstitial pneumonia	Idiopathic; connective tissue diseases; drugs; hypersensitivity pneumonitis; resolving diffuse alveolar damage; AIDS; infections
Diffuse alveolar damage	Acute interstitial pneumonia (Hamman-Rich syndrome); acute respiratory distress syndrome; drugs (cytotoxic agents, heroin, cocaine, paraquat, ethchlorvynol, aspirin); toxic gas inhalation; radiation therapy; oxygen toxicity; connective tissue disease; infections ( <i>Legionella</i> , <i>Mycoplasma</i> , viral)
Organizing pneumonia	Cryptogenic organizing pneumonia; organizing stage of diffuse alveolar damage; organizing infections (e.g . , influenza) as part of diffuse alveolar hemorrhage; drugs (amiodarone, cocaine); infections; connective tissue diseases; hypersensitivity pneumonitis; eosinophilic pneumonia; granulomatosis with polyangiitis
Desquamative interstitial pneumonia or respiratory bronchiolitis	Cigarette smoking; idiopathic; connective tissue diseases; primary pulmonary Langerhans cell histiocytosis; asbestosis; hard-metal pneumoconiosis (cobalt); Gaucher disease; Niemann-Pick disease; Hermansky-Pudlak syndrome; drugs (nitrofurantoin, amiodarone)
Lymphocytic interstitial pneumonia	Idiopathic; hypogammaglobulinemia; autoimmune diseases, including Hashimoto thyroiditis, systemic lupus erythematosus, primary biliary cirrhosis, Sjögren syndrome, myasthenia gravis, chronic active hepatitis; AIDS; allogeneic bone marrow transplantation

۶۸- جوان 25 ساله ای 6 ساعت قبل به قصد خودکشی سم پاراکوات مصرف کرده است. با توجه به مواجهه این بیمار همه موارد زیر نادرست است  
بجز:

- ادم ریوی در هفته دوم بعد از مواجهه دیده می‌شود.
- سطح پلاسمایی سم در تخمین پیامد بیمار کمک کننده است.
- دریافت اکسیژن باعث بدتر شدن پیش آگهی بیمار می‌شود.
- علت اصلی فوت نارسایی تنفسی است.

- Paraquat is a widely used herbicide and a potent toxin. Ingestion, rather than inhalation, is the typical route of exposure associated with human toxicity. There have been systemic reactions following skin exposure after direct exposure to the skin (e.g., soaking of the skin with paraquat) or when the skin integrity has been breached (e.g., preexisting skin lesions or burn). The theoretical risk of smoking contaminated materials has never been established.
- Most paraquat deaths result from suicidal intent. 22 , 282 , 283 Paraquat ingestion is a relatively uncommon method of suicide in the United States, but its incidence is greater in a number of other countries, perhaps related to patterns of crop utilization and ease of access. 282 , 284 Although paraquat ingestion leads to acute gastrointestinal tract necrosis and multiorgan failure, the lung is the target organ for toxicity among those surviving the immediate postingestion period. Diquat, a related dipyridyl herbicide, does not cause the lung injury associated with paraquat, although poisoning can lead to renal failure and cerebral hemorrhage. 285
- The pulmonary toxicity of paraquat, in contrast to its gastrointestinal effects, does not reflect caustic irritant injury. The major lung effect of paraquat toxicity is the development of pulmonary edema, usually observed 24 to 48 hours after ingestion. The pulmonary edema may evolve to a condition resembling ARDS, associated with histopathologic findings similar to those of DAD, which may progress to an accelerated, chemically induced pulmonary fibrosis. After stabilization following acute multiorgan toxic effects, disease progression is marked by rapidly worsening respiratory distress, hypoxemia, and a restrictive ventilatory defect, with decreased lung compliance and diffusing capacity, ending in death from ventilatory failure within days to weeks. 22 , 282 Survivors may demonstrate modest and slow improvement in lung function. 286

- The mechanism of paraquat toxicity is attributed to the generation of superoxide radicals that may be partly iron dependent. Consistent with an oxidant mechanism, supplemental oxygen and radiation therapy may worsen the outcome; there are no known antidotes for paraquat poisoning, and enhanced elimination such as by hemoperfusion has not demonstrated a clear benefit. 22 , 282 Plasma paraquat levels can be determined and may have a use in predicting outcome. 287 Data suggest a possible therapeutic benefit from immunosuppression, but this awaits confirmation through controlled clinical trials. 23 , 282 Death results from multiorgan failure, which usually happens within 1 to 2 weeks but may be observed up to 6 weeks after ingestion.

۶۹- مرد 25 ساله کارگر یک واحد تولیدی دچار حادثه تماس با بخارات ناشناخته در محل کار شده است 6 ساعت پس از تماس دچار تب، لرز، درد عضلانی و ضعف شده است. سرفه و تنگی نفس مختصر دارد. رادیوگرافی قفسه سینه نرمال است و لکوسیتوز خون محیطی دارد. محتمل ترین علت استنشاق بخارات کدامیک از عوامل زیر است؟

Zinc oxide

Nitrogen dioxide

Sulfur dioxide

Chlorine dioxide

Major Clinical Scenarios of Pulmonary Responses Shortly After Acute Toxicant Exposure

Clinical Scenario	Exemplar Exposures
Mucous membrane and airway irritation (burning eyes, nose, and throat; laryngospasm and bronchospasm) with or without lower lung injury (pulmonary edema, diffuse alveolar damage)	Chlorine, chlorine dioxide, chloramine; bromine; sulfur dioxide; acid aerosols (sulfuric, hydrochloric, hydrofluoric); ammonia; zinc chloride (smoke bombs)
Lower lung injury (pulmonary edema, diffuse alveolar damage) with little or no mucous membrane irritation or airway effects	Nitrogen dioxide, phosgene, ozone, cadmium fume, mercury vapor, nickel carbonyl, fluorocarbon (waterproofing)
Self-limited flulike illness with fever and leukocytosis beginning 6–12 hr after a clear exposure history	Zinc oxide fume, heavy organic dust inhalation, polymer fume, endotoxin
Foreign substance ingestion followed by pneumonitis	Hydrocarbon aspiration, exogenous lipoid pneumonia, paraquat fibrosis

۷۰- مردی موتور سوار بدنبال تصادف با اتومبیل ومولتیپل تروما منجمله ترومای قسه سینه به اورژانس آورده می‌شود کدامیک از موارد زیر قوی ترین تاثیر را در مورتالیتة این فرد دارد؟

سن بالا

تعداد دنده دهای شکسته شده

وجود شکستگی در استخوانهای بلند اندام تحتانی

GCS پائین

- Among trauma victims, thoracic trauma is the second most common cause of death in the field and the third most common cause of death in patients who make it to the hospital. In civilian trauma, the most common mechanism is blunt trauma, and the most frequently encountered injuries (i.e., hemothorax and pneumothorax) are seen in 20% of patients. 1 The majority will require only tube thoracostomy for definitive treatment. However, up to 15% of these patients will require operative intervention, 1 whether immediate (resuscitative), urgent, or delayed. Overall mortality in patients with thoracic trauma is approximately 10%, with a low Glasgow Coma Scale score exerting the strongest influence on mortality. 1 Additional predictors of poor outcomes include increasing age, mechanism of blunt injury, increasing number of ribs fractured, and concomitant long bone extremity fractures.

## ۷۱- در مورد ادم ریه ناشی از ارتفاع (High Altitude) همه موارد ذیل صحیح است بجز:

در این بیماری افزایش فشار شریان پولمونر و فشار وج وجود دارد  
مهارکننده فسفودی استراز در پیشگیری از بروز آن موثر است  
شایعترین علت مورتالیتی ناشی از صعود به ارتفاع است  
نیفیدپین در پیشگیری و درمان بیماری فوق موثر است

- The most common cause of death from high-altitude illness, HAPE was historically misdiagnosed as pneumonia, bronchitis, or congestive heart failure. noncardiogenic pulmonary edema
- Typically manifesting within 2 to 4 days of ascent to altitudes higher than 2400 m, persons with HAPE usually present in the early stages with decreased exercise performance and increased time to recover from exertion, as well as fatigue, weakness, a persistent dry cough, and, in some cases, symptoms of AMS. As the disease worsens, individuals are dyspneic on minimal exertion and, in the most severe cases, dyspneic at rest. Even in the absence of concurrent HACE, severe hypoxemia may produce mental changes, ataxia, and altered levels of consciousness.
- On physical examination, patients may have a low-grade fever to 38.5°C as well as tachycardia, tachypnea, and decreased oxygen saturation by pulse oximetry (Sp o 2 ). Generalized pallor and cyanosis are often present, whereas crackles are initially heard in the right mid-lung fields and then more diffusely as the disease worsens. Radiographs 147 and computed tomography scans show patchy, alveolar opacities, which may be limited to one area (the right lung field predominating initially) or generalized, depending on illness severity ( Fig. 105.8 ). Arterial blood gas measurements reveal severe hypoxemia. In a study at 4559 m, for example, individuals with HAPE had a mean arterial P o 2 of  $23 \pm 3$  mm Hg and an average arterial S o 2 of  $48 \pm 8\%$  versus  $40 \pm 5$  mm Hg and  $78 \pm 7\%$ , respectively, for healthy control subjects. 148 Although not used as part of diagnostic protocols, right heart catheterization performed in a research setting demonstrates increased PA and pulmonary capillary pressure, but normal pulmonary capillary wedge pressure consistent with normal left ventricular function.
- it is well established that elevated PA pressure plays a key role in development of HAPE. HAPE-susceptible individuals have exaggerated HPV, which likely accounts for their elevated PA pressures; The reasons for this exaggerated response are not entirely clear but may be related to differences in hypoxic ventilatory responsiveness, lung volumes, increased sympathetic tone, or alterations in circulating vasoactive mediators including endothelin, nitric oxide, and free radicals.
- edema results from uneven hypoxic vasoconstriction, leading to overperfusion of the microvasculature in areas of the lung where arteriolar vasoconstriction fails to protect downstream vessels.
- high pressures and shear stress lead to a high permeability–type leak along a continuum of pressure-related phenomena by which plasma and even RBCs move from the intravascular space to the interstitium and subsequently into the alveolar space. with greater duration and further pressure elevation, may lead to capillary rupture and alveolar hemorrhage, as seen in severe HAPE.
- bronchoalveolar lavage studies in patients with HAPE that demonstrated increased cellularity and the presence of chemotactic (leukotriene B 4 ) and vasoactive (thromboxane B 2 ) mediators compared with control subjects. The lavage fluid demonstrated high protein and RBC content, the levels of which correlated with PA pressure estimated by echocardiography ,but no evidence of cytokine expression or neutrophil recruitment.

۹۰- مرد ۴۰ ساله‌ای با سابقه تنگی نفس از ۶ ماه قبل مراجعه کرده‌است. معاینه قلب نرمال بوده و کراکل مختصر در قاعده‌ی هر دو ریه شنیده می‌شود. هنگام دم شکم فرو می‌رود. کدامیک از اقدامات زیر در بیمار کمتر کمک کننده است؟

مقایسه‌ی تست‌های ریوی در حالت نشسته و خوابیده

رادیوگرافی قفسه سینه

اندازه‌گیری فشار ترنس دیافراگماتیک

اولتراسونوگرافی عضله دیافراگم

- Bilateral diaphragmatic paralysis is most often seen in the setting of a disease producing severe generalized muscle weakness. The most common causes are diffuse muscle diseases or motor neuron disease, such as ALS. However, bilateral paralysis may develop with a myriad of disorders that involve the cervical spinal cord, phrenic nerve, or neuromuscular junction; examples include neuralgic amyotrophy (Parsonage-Turner syndrome) or complications following cardiac, thoracic, or neck surgery. 154
- Patients with bilateral paralysis primarily complain of dyspnea, 155 either at rest, during exercise, or during certain activities that increase abdominal pressure. These activities, such as bending, lifting, or becoming immersed in water, increase abdominal pressure and displace the paralyzed diaphragm cranially, thereby decreasing lung volume. A similar problem arises upon lying supine; thus orthopnea is a common symptom, and patients may need to use a recliner to sleep. Because sleep-disordered breathing with hypoventilation and hypoxemia is common, 156 these individuals generally respond well to NPPV. 157
- Bilateral diaphragmatic paralysis may be suspected by observing paradoxical rib cage and abdomen motion during inspiration. The gold standard diagnostic test is measuring transdiaphragmatic pressure ( Fig. 130.4 ). 158 Alternatively, diaphragm ultrasound provides a noninvasive means of obtaining the diagnosis as discussed in the “Diaphragm Imaging” section. Once the diagnosis of bilateral diaphragmatic paralysis is confirmed, further diagnostic workup should include an evaluation for nocturnal hypoventilation and computed tomography of the chest to exclude a mediastinal mass, which may be compressing or invading the phrenic nerve. In addition, magnetic resonance imaging of the neck may be needed to evaluate the spinal cord and nerve roots.

- Bilateral diaphragmatic paralysis is usually not reversible unless the underlying disease is treatable. Spontaneous recovery of diaphragm function has been noted in some individuals with bilateral paralysis due to neuralgic amyotrophy (brachial plexus neuritis) with the recovery taking an average of 15 months from the onset of symptoms.
- Phrenic nerve pacing requires intact phrenic nerves and has been used in patients with cervical cord injuries above C3 and in patients with congenital hypoventilation syndrome. Thus it is not applicable in most cases of diaphragmatic paralysis. Direct diaphragmatic pacing involves the implantation of electrodes in the diaphragm. Identification of the entrance points of the phrenic nerve into the diaphragm is a prerequisite for direct pacing because uniform diaphragm activation requires placing the intramuscular electrodes in these locations. 160 For unclear reasons, pacing has not been helpful in patients with ALS. 161 Interventions such as sural or intercostal nerve grafting and transfers may provide options in the future to restore diaphragm function.
- Diaphragm dysfunction related to metabolic or hormonal imbalance (hypothyroid, hypokalemia, hypomagnesemia, hypophosphatemia, alcohol use, diabetic neuropathy) or parasitic infections may improve with treatment of the underlying disease.

# Pulmonary Function Testing

- Tests of pulmonary function are useful for initial assessment of and, often more important, follow-up of patients over time.
- Spirometry classically shows a restrictive defect, but FVC may be preserved early on. A fall in FVC by more than 25% upon lying supine is more sensitive and specific than changes in upright FVC for detecting diaphragm weakness.
- The flow-volume loop may show flow oscillations in patients with bulbar involvement.
- Functional residual capacity, inspiratory capacity, and total lung capacity typically decline over time, while residual volume may be elevated due to expiratory muscle weakness.
- MIP and MEP are often both reduced but, in patients with isolated diaphragm weakness, MIP may decline while MEP is relatively preserved.
- Tests of respiratory muscle strength may be difficult for patients with bulbar dysfunction to perform, and sniff nasal inspiratory pressure may be more reliable.
- The 1999 National Association for Medical Direction of Respiratory Care National Consensus Conference, which ultimately informed the Centers for Medicare and Medicaid coverage decisions, developed guidelines for the initiation of NPPV and included MIP less than 60 cm H<sub>2</sub>O and FVC less than 50% among the physiologic criteria to initiate NPPV in neuromuscular disease.

۹۱- در بیمار کیفو اسکلیوز و شواهد کورپولمونال همه موارد زیر لزوم کاربرد تهویه غیر تهاجمی در شب است بجز:

$P_{CO_2} \geq 45$

$PI_{Max} < 60 \text{ cmH}_2\text{O}$

$FEV_1 < 60\%$

$Spo_2 < 88\%$  بیش از 5 دقیقه در هنگام خواب

# Indications

Symptoms (e.g., fatigue, morning headaches, dyspnea) or signs of right heart dysfunction and one of the following:

- Daytime arterial  $P_{CO_2} \geq 45$  mm Hg
- Nocturnal oxygen saturation  $< 88\%$  for  $> 5$  consecutive minutes
- Progressive neuromuscular disease with  $P_{i_{max}} < 60$  cm H<sub>2</sub>O or FVC  $< 50\%$  of predicted

# Benefits

## Gas Exchange

Increased arterial  $P_{O_2}$   
Decreased arterial  $P_{CO_2}$

## Hemodynamics

Decreased pulmonary arterial pressure  
Improved right ventricular function

## Mechanics

Reduced work of breathing  
Increased maximal inspiratory pressure

## Sleep Hygiene

Normalized sleep patterns  
Fewer apneic episodes

## Outcome

Fewer hospitalizations  
Improved quality of life  
Relief of dyspnea  
Possible increased survival

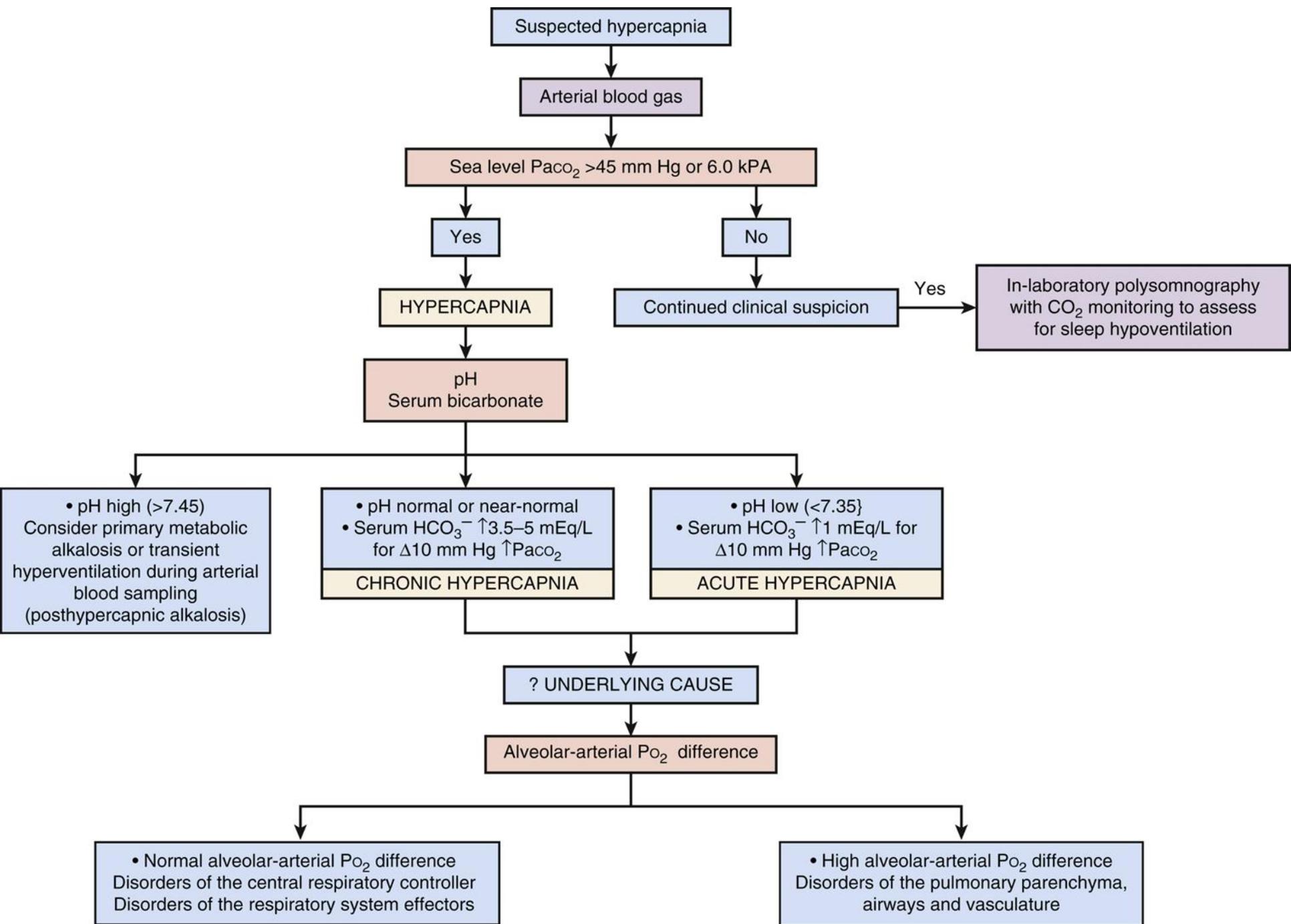
۹۲- مرد 35 ساله غیر سیگاری بدنبال انتوباسیون طولانی مدت 6 ماه قبل ناشی از تصادف اتومبیل با تابلوی تنگی نفس و خس خس سینه مراجعه کرده است در معاینات تاکی پنه و تنفس سطحی دارد سمع ریه‌ها ویزینگ لوکالیزه در ناحیه استرنوم دردم و بازدم و کراکل ابتدای دمی در قاعده هردو ریه دارد برونکوسکپی تنگی شدید قسمت میانی تراشه با کاهش قطر تراشه به 5 میلی متر را نشان میدهد. آزمایش گازهای خونی هیپرکاپنی و هیپوکسمی را نشان میدهد. محتملترین علت اختلال تبادل گازی این بیمار کدام است؟

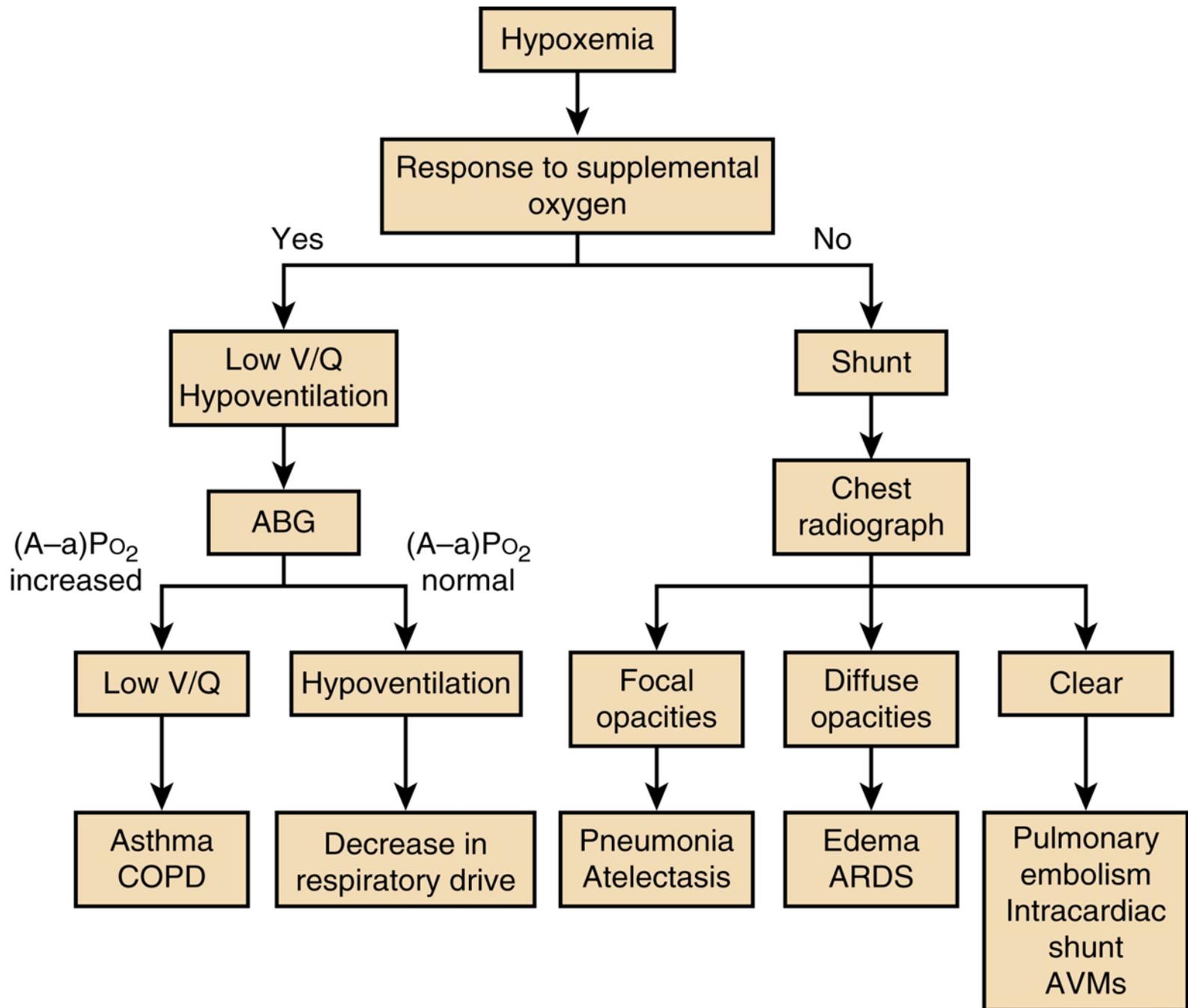
Diffusion abnormality

Alveolar hypoventilation

V/Q mismatch+ hypoventilation

Right to left shunt





<b>Mechanism of Hypoxemia</b>	<b>(A-a)P<sub>o2</sub></b>	<b>Response of Arterial P<sub>o2</sub> to Increase in F<sub>io2</sub></b>
Low ventilation-perfusion	Increased	Improves
Shunt	Increased	Minimal improvement
Diffusion limitation	Increased	Improves
Hypercarbia	Normal	Improves
Decreased P <sub>io2</sub>	Normal	Improves

## در مورد عملکرد واحد انتهایی تنفسی (Terminal Respiratory Unit) کدام عبارت صحیح است؟

تمام اجزاء این واحد ها به شکل یکسان در تغییر حجم ریه متعاقب هر تنفس مشارکت می کنند.  
در هر تنفس عمده هوای تازه استنشاق شده، وارد آلوئول ها می شود.  
متعاقب هر استنشاق هوای تازه، گرادیان فشار نسبی  $O_2$  و  $CO_2$  در آلوئول تغییر می کند.  
ذرات معلق استنشاقی به دیوار آلوئول متصل شده و فرصت خروج با بازدم را نمی یابند.

- Each terminal bronchiole conducts air to a respiratory unit, or acinus. The acinus is where alveolization, and therefore gas exchange, begins. The acinus can also be termed the terminal respiratory unit, indicating its chief role in gas exchange. The terminal bronchioles divide into respiratory bronchioles that have occasional alveoli budding from their wall, which then transition to the alveolar ducts, structures that are completely lined with alveoli. This alveolated region of the lung where gas exchange takes place is known as the respiratory zone. The distance from the terminal bronchiole to the most distal alveolus is only approximately 5 mm, but the respiratory zone makes up most of the lung in terms of gas volume (some 2–3 L).

- The TRU consists of a respiratory bronchiole and all the alveolar ducts together with their accompanying alveolar ducts and alveoli (see Fig. 1.14 ; see Table 1.2 ). The TRU has both a structural and a functional existence and was first described in the human lung by Hayek. 11 In the human lung, this unit contains approximately 100 alveolar ducts and 2000 alveoli. At FRC, the unit is approximately 5 mm in diameter, with a volume of 0.02 mL. There are about 150,000 such units in the lungs of normal adult humans. 6
- The functional definition of the TRU is physiologic; namely, gas-phase diffusion is so rapid along patent airways that the partial pressures of O<sub>2</sub> and CO<sub>2</sub> are uniform throughout the unit. 28 Therefore, physiologically, O<sub>2</sub> in the gas phase anywhere along the TRU will diffuse along its concentration gradient across the extremely thin walls into RBCs flowing in the capillaries ( Fig. 1.16 ), where O<sub>2</sub> combines with hemoglobin. CO<sub>2</sub> diffuses in the opposite direction along its concentration gradient. A key point about diffusion is that the process is much faster in the gas phase than in the liquid phase. Thus, the TRU size is defined in part by the fact that gas molecules can diffuse and equilibrate anywhere within the unit more rapidly than they can diffuse across the air-blood barrier into the blood. Of note, the solubility of O<sub>2</sub> in water is low relative to its concentration in gas. CO<sub>2</sub> is much more soluble in water (20 times the solubility of O<sub>2</sub> in water), and therefore CO<sub>2</sub> diffuses rapidly into the gas phase, even though the driving pressure for CO<sub>2</sub> diffusion is only one-tenth that for O<sub>2</sub> entering the blood.

- All portions of the TRU participate in volume changes with breathing. 98 , 99 When a unit increases its volume from FRC, the alveolar gas that had been in the alveolar duct system enters the expanding alveoli, together with a small portion of the fresh air. Most of the fresh air remains in the alveolar duct system. This does not lead to any significant gradient of alveolar O<sub>2</sub> and CO<sub>2</sub> partial pressures because diffusion in the gas phase is so rapid that there is equilibrium within a few milliseconds. However, nondiffusible (suspended or particulate) matter remains away from the alveolar walls and is expelled in the subsequent expiration. 100 This explains why it is difficult to deposit aerosols on the alveolar walls and why large inspired volumes and breath-holding are needed for efficient alveolar deposition.
- The anatomic alveolus is not spherical ( Fig. 1.17 , see Fig. 1.15 ). It is a complex geometric structure with flat walls and sharp curvature at the junctions between adjacent walls. The most stable configuration is for three alveolar walls to join together, as in foams. 6 The resting volume of an alveolus is at 10–14% of TLC. When alveoli go below their resting volume, they must fold up because their walls have a finite mass (see Fig. 1.17 ). Most of the work required to inflate the normal lung is expended across the air-liquid interface to overcome surface tension; the importance of the air-liquid interface is demonstrated by the low pressure required to “inflate” a liquid-filled lung with more liquid

- The alveolar walls are composed predominantly of pulmonary capillaries. In the congested alveolar wall the blood volume may be greater than 75% of the total wall volume. **Alveoli near the top of the lung show less filling of the capillaries than those at the bottom.** 103 , 104 **This affects regional diffusing capacity, which is dependent on the volume of RBCs in the capillaries.**
- The transition from a cuboidal epithelium of the respiratory bronchiole to the squamous epithelium of the alveolus is abrupt ( Fig. 1.19 ). Little is known about the function, if any, of this transitional junction. Although Macklin 105 speculated that the permeability of the bronchiole-alveolar epithelial junctions might be unique, no definitive difference has been demonstrated. 106 The controversy continues as to whether this region shows unique permeability features that might participate in clearance of particles or leakage of edema.

- Trapping and clearance of particulate matter impinging on the alveolar surfaces is vital and takes place in the alveolar surface liquid. Within this liquid are suspended alveolar macrophages (see Fig. 1.19 ). 110 The majority of alveolar macrophages that reach the terminal airways via the slow, upward flow of alveolar lining liquid are expelled with the surface film as it is pulled up onto the mucociliary escalator.

۲- آقای 35 ساله غیر سیگاری به دنبال تصادف با موتور دچار پارزی اندام های فوقانی شده و در وضعیت خوابیده دچار تنگی نفس و هیپوکسی می شود. در رادیوگرافی قفسه سینه شکستگی دنده و کنتوزیون ریه وجود ندارد. جهت بررسی تنگی نفس بیمار اقدام مناسب بعدی کدام است؟

MRI با و بدون تزریق ریه  
سی تی انژیوی ریه  
بادی پلتیسموگرافی و اسپیرومتری  
فلوروسکوپی دیافراگم

- Bilateral diaphragmatic paralysis is most often seen in the setting of a disease producing severe generalized muscle weakness. The most common causes are diffuse muscle diseases or motor neuron disease, such as ALS. However, bilateral paralysis may develop with a myriad of disorders that involve the cervical spinal cord, phrenic nerve, or neuromuscular junction; examples include neuralgic amyotrophy (Parsonage-Turner syndrome) or complications following cardiac, thoracic, or neck surgery. 154
- Patients with bilateral paralysis primarily complain of dyspnea, 155 either at rest, during exercise, or during certain activities that increase abdominal pressure. These activities, such as bending, lifting, or becoming immersed in water, increase abdominal pressure and displace the paralyzed diaphragm cranially, thereby decreasing lung volume. A similar problem arises upon lying supine; thus orthopnea is a common symptom, and patients may need to use a recliner to sleep. Because sleep-disordered breathing with hypoventilation and hypoxemia is common, 156 these individuals generally respond well to NPPV. 157
- Bilateral diaphragmatic paralysis may be suspected by observing paradoxical rib cage and abdomen motion during inspiration. The gold standard diagnostic test is measuring transdiaphragmatic pressure ( Fig. 130.4 ). 158 Alternatively, diaphragm ultrasound provides a noninvasive means of obtaining the diagnosis as discussed in the “Diaphragm Imaging” section. Once the diagnosis of bilateral diaphragmatic paralysis is confirmed, further diagnostic workup should include an evaluation for nocturnal hypoventilation and computed tomography of the chest to exclude a mediastinal mass, which may be compressing or invading the phrenic nerve. In addition, magnetic resonance imaging of the neck may be needed to evaluate the spinal cord and nerve roots.

۶- خانم 50 ساله غیر سیگاری به علت ارتوپنه مراجعه نموده اند که از شش ماه پیش شروع و پیشرونده بوده است. سمع ریه نرمال است. رادیوگرافی قفسه سینه، پارانشیم هر دو ریه طبیعی است ولی تیروئید رترواسترنال بزرگ مشهود است. جهت بررسی بیمار کدامیک اقدامات زیر کمتر کمک کننده است؟

اسپیرومتری در حالت خوابیده  
سی تی ریه بدون کنتراست  
ام آر ای قفسه سینه  
بادی پلتیسموگرافی

- In surgical series, ectopic thyroid glands account for fewer than 10% of mediastinal masses but, in clinical practice, they probably represent a higher proportion .
- Thyroid tissue within the mediastinum is of two distinct origins: from the thyroid or from embryonal tissue. Most commonly, a cervical goiter extends substernally into the anterior mediastinum, 114 whereas primary intrathoracic goiter, presumably originating from an embryonic nest of heterotopic thyroid tissue, is rare.
- Most such goiters are in the anterior mediastinum, but they may arise in the middle or posterior mediastinum as well. 4 , 5 Intrathoracic goiter presents predominantly in middle-aged or older women. Although it is usually asymptomatic, goiter may cause hoarseness, cough, or swelling of the face and arms. Intrathoracic thyroid tissue is easily recognized by radioactive iodine scanning, 115 as long as the scan is completed before intravenous iodinated contrast injection, which may block iodine uptake for weeks. It may be suspected on the basis of high radiodensity on CT scans, particularly after iodinated contrast injection. 116 , 117 Treatment is surgical resection.

۸- در بیماری که به علت تنگی نفس با علت نامعلوم جهت انجام تست ورزش قلبی ریوی مراجعه کرده است مقادیر  $\text{Maximal VO}_2$  و  $\text{Maximal Voluntary Ventilation reserve}$  و  $\text{Heart Rate Reserve}$  و  $\text{Anaerobic Threshold}$  پایین تر از حد نرمال ولی مقادیر  $\text{VE/VC}_{O_2}$  نرمال گزارش شده است. تمامی تشخیص های افتراقی زیر مطرح است، بجز:

Pulmonary Vascular Diseases

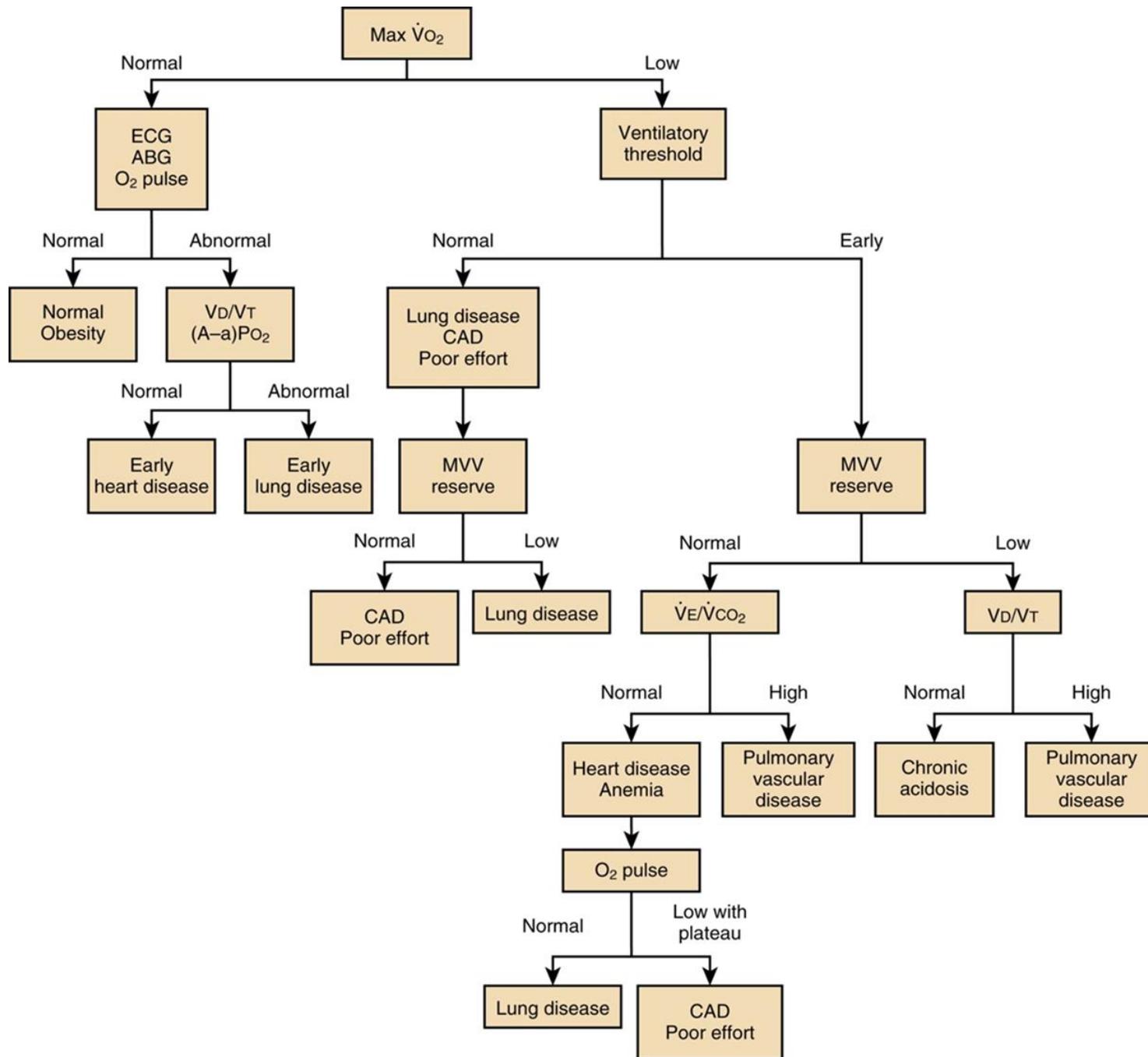
Coronary Artery Diseases

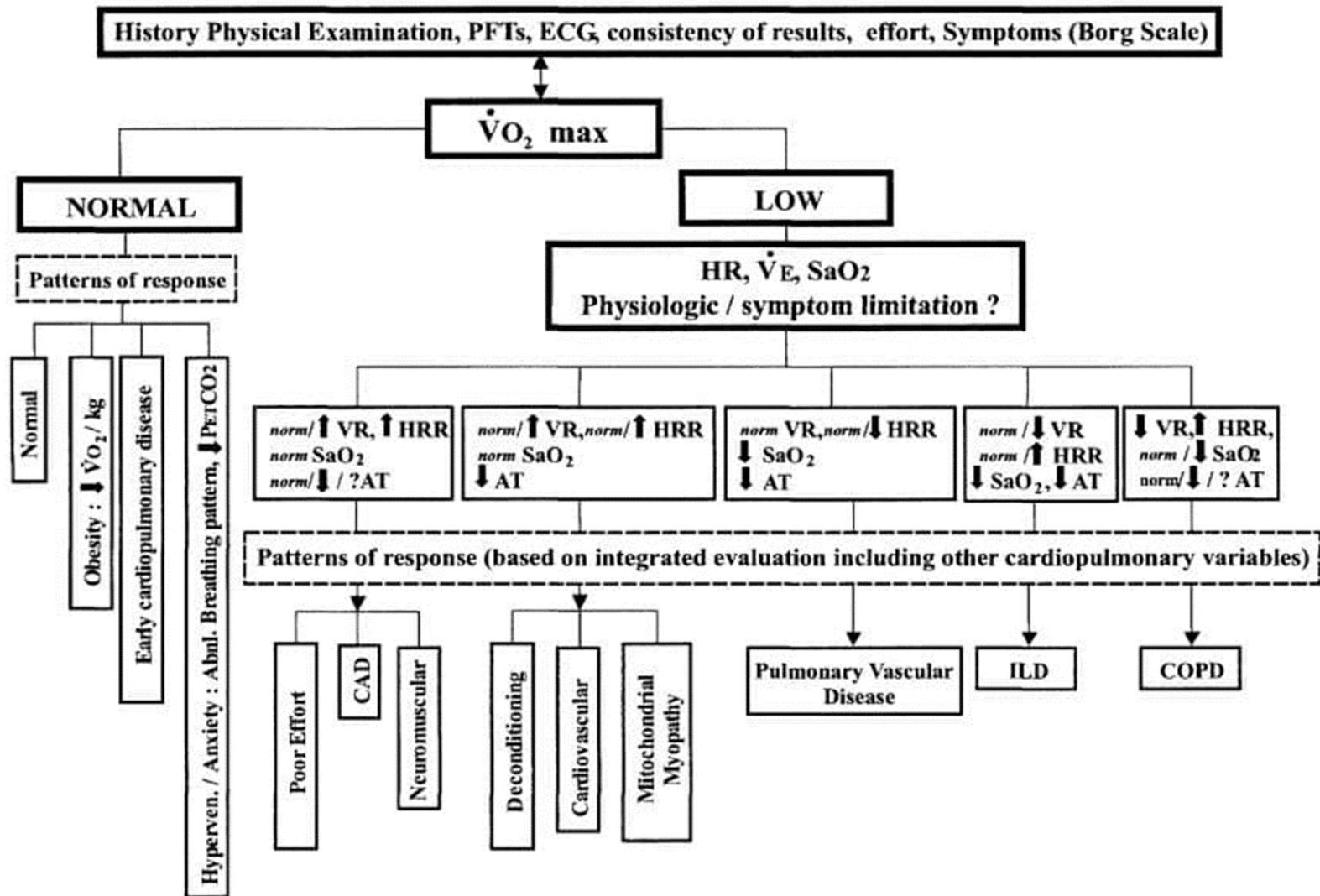
Anemia

Deconditioning

**TABLE 18. USUAL CARDIOPULMONARY EXERCISE RESPONSE PATTERNS**

Measurement	Heart Failure	COPD	ILD	Pulmonary Vascular Disease	Obesity	Deconditioned
$\dot{V}O_{2\max}$ or $\dot{V}O_{2\text{peak}}$	Decreased	Decreased	Decreased	Decreased	Decreased for actual, normal for ideal weight	Decreased
Anaerobic threshold	Decreased	Normal/decreased/indeterminate	Normal or decreased	Decreased	Normal	Normal or decreased
Peak HR	Variable, usually normal in mild	Decreased, normal in mild	Decreased	Normal/slightly decreased	Normal/slightly decreased	Normal/slightly decreased
$O_2$ pulse	Decreased	Normal or decreased	Normal or decreased	Decreased	Normal	Decreased
$(\dot{V}_E/MVV) \times 100$	Normal or decreased	Increased	Normal or increased	Normal	Normal or increased	Normal
$\dot{V}_E/\dot{V}CO_2$ (at AT)	Increased	Increased	Increased	Increased	Normal	Normal
$V_D/V_T$	Increased	Increased	Increased	Increased	Normal	Normal
$Pa_{O_2}$	Normal	Variable	Decreased	Decreased	Normal/may increase	Normal
$P(A-a)O_2$	Usually normal	Variable, usually increased	Increased	Increased	May decrease	Normal





**Figure 10.** Basic strategy for the interpretation of peak CPET results begins with consideration of patient information and reasons for testing and with analysis of  $\dot{V}O_2$  max and subsequently simultaneous assessment of HR,  $\dot{V}_E$ , and SaO<sub>2</sub>. The AT may be helpful at this point. Determination of physiologic limitation is accomplished by analysis of ventilatory reserve ( $\dot{V}_E$ /MVV) and heart rate reserve (HRR). Additional CPET measurements and patterns of response are established and (likely) associated clinical entities are considered, resulting in more specific diagnostic pathways (28). CAD = coronary artery disease.

· پسر 12 ساله ای به شما مراجعه می کند از نوزادی هیپوتیروئیدی و کره عصبی داشته است سابقه عفونت های ریوی مکرر را می دهد و در CT اسکن ریه شواهد بیماری انترستیسیل منتشر دارد کدامیک از علل زیر محتمل تر است؟

نقص ژن فاکتور NKX2-1  
اختلال در تولید فاکتور PDGF-A  
تزریق دگزامتازون در آخر بارداری مادر  
کمبود ویتامین A در حاملگی مادر

- NKX2.1 (also known as thyroid transcription factor 1 or TTF1) is a transcription factor essential for expression of SP-B, SP-C, and ABCA3. Haploinsufficiency of NKX2.1 causes a complex phenotype in neonates that includes, albeit variably, hypothyroidism, brain abnormalities, and acute and chronic lung disease. 75 , 76
- Although the lung diseases associated with mutations in SP-B, SP-C, ABCA3, and NKX2.1 disrupt surfactant homeostasis, cause varying degrees of surfactant accumulation (i.e., PAP), and are often cited as congenital forms of PAP in the medical literature, they are distinguished from disorders of surfactant clearance by their surfactant dysfunction (i.e., functionally abnormal surfactant), histopathologic abnormalities (gross parenchymal derangement and interstitial disease), and their clinical course. In consequence, the term pulmonary surfactant metabolic dysfunction (PSMD) disorders has been proposed for this group of genetic disorders.

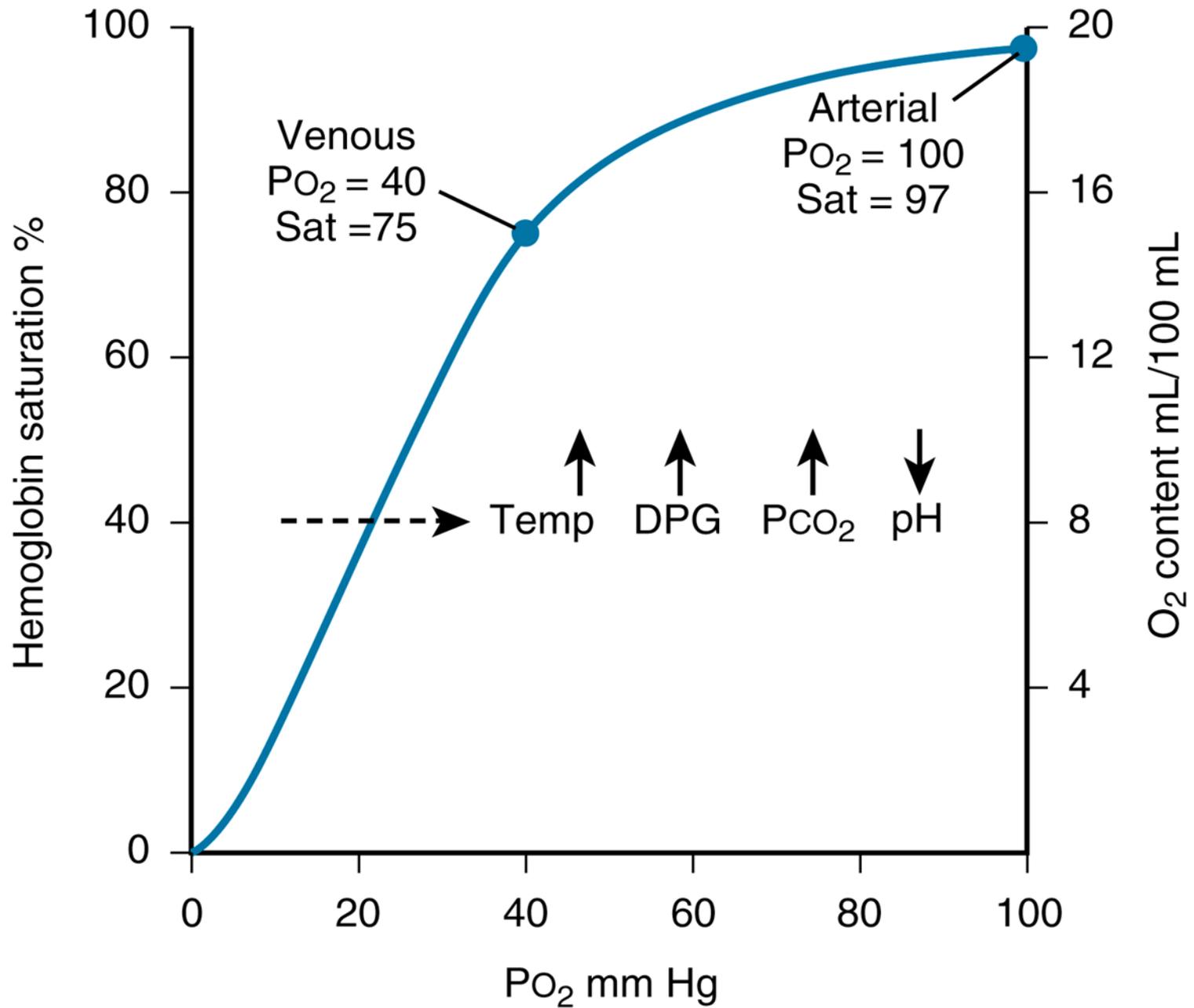
۱۲- کدامیک از فاکتورهای زیر سبب تغییر منحنی جدایی اکسیژن از هموگلوبین به سمت راست می شود؟

کاهش دما

افزایش یون هیدروژن

کاهش سطح دی فسفو گلیسرات

هیپوکاپنی



### ۱۳- در خصوص سیستم ایمنی ریه همه موارد زیر درست است، بجز:

عملکرد اصلی نوتروفیل ها، کشتن میکربها با به دام انداختن خارج سلولی آنها می باشد  
سلول های دندریتیک در شناسایی آنتی ژن ها نقش دارند  
ماکروفاژها در سرکوب التهاب ب های نا خواسته در آلوئول نقش دارند  
سورفاکتانت پروتئین A در سرکوب التهاب های نا خواسته در آلوئول نقش دارد

وظایف اصلی ماکروفاژ:

توانایی فاگوسیتوز میکروبه‌های با ضرر و بدون ضرر  
به دام انداختن ذرات و میکروبه‌های استنشاق شده  
پاکسازی سورفاکتانت ریوی  
سایرس کردن ایجاد التهاب و پاسخ ایمنی نامناسب

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی: ۱۳۶۴۷۴

نام بیمار : .....

تاریخ مراجعه : .....

«هوالثانی»

سوزش گلو : (دائمه برگشت)

innate immunity      اثرات ثانویه  
Phagocytosis      Paradox

کاهش الکاب در درون حلق  
افزایش الکاب در ریه ها  
الفعل به بار برکت  
دارکمان

رئیه منفرجه (افزایش گلو)      اثرات ثانویه

RSV, Influenza, Viruses  
PCP, Fungi, Mycobacteria

Mohsen Sadeghi M.D  
Internist  
Assistant Professor

- DCs are the “professional” antigen-presenting cells of most tissues. DCs represent an important group of phagocytic and antigen-presenting cells acting as a bridge between the innate and the adaptive immune systems. In the lung, DCs have been shown to form an extensive intraepithelial and subepithelial network throughout the respiratory tract

۱۵- کدامیک از انواع سورفاکتانت پروتئین زیر در دفاع بر علیه ویروس ها و باکتری ها نقش کمتری داشته و با ایجاد بیماری های انترستیسیل ریه ارتباطی ندارد ولی نقش اساسی در کاهش کشش سطحی ایفا می کند؟

- A
- B
- C
- D

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی: ۱۳۶۴۷۴

نام بیمار : .....

تاریخ مراجعه : .....

« هوالشافی »

سوزش گلو : (دائمه برگشت)

innate immunity

ایمنی ذاتی

Phagocytosis

Paradox

الفعل به پارسی

کوتاه کتاب در ریه طبیعی

افزایش کتاب در ریه

دائره

(رئیتوی) افزایش گلو

RSV, Influenza, Viruses

PCP, Fungi, Mycobacterium

Mohsen Sadeghi M.D

Internist

Assistant Professor

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی: ۱۳۶۴۷۴

نام بیمار : .....

تاریخ مراجعه : .....

« هوالشافی »

سورفانت B : نس سغی

سورفانت C :

محسن SFTPC

۱۷۵ در سن ۵۰

Mohsen Sadeghi M.D

Internist

Assistant Professor

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی : ۱۳۶۴۷۴

نام بیمار :

تاریخ مراجعه :

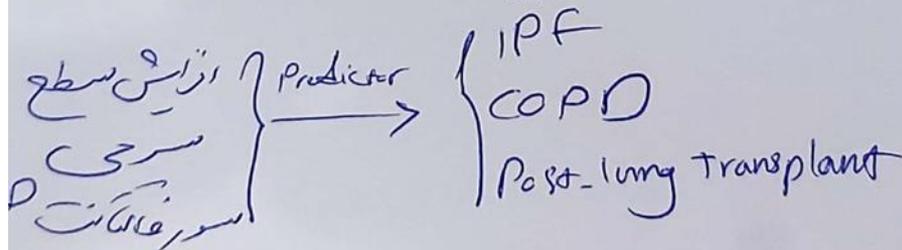
« هوالتافی »

سورفالتان D (واسته ریکم)

- Pro inflammatory
- anti inflammatory

اثرات در عفونت های  
پارازیتاریک، لیستریا، هیستوپلازما

- PCP, ILID



Mohsen Sadeghi M.D

Internist

Assistant Professor

۱۶- مهمترین فاکتور تعیین کننده در رسوب پارتیکل های داروهای استنشاقی در مجاری هوایی فوقانی کدامیک از موارد زیر است؟

Greater mass

فلوی سریع تر

باریک بودن راه هوایی

Inertial Impaction

- Inertial impaction is the dominant mechanism by which particles deposit in the nasopharynx and more proximal airways.
- In general, the greater the mass, the faster the velocity, and the narrower the airway, the greater the likelihood that the particle will deposit by impaction.
- Impaction describes the process by which a particle fails to follow the air stream in which it is suspended, thereby impacting on an obstacle instead of circumventing it.

۲۱- ارزش تشخیصی **Trasbronchial lung biopsy** در کدامیک از بیماری های زیر بیشتر است؟

Sarcoidosis

Tuberculosis

Alveolar proteinosis

Langerhans cell histiocytosis

# TBB

- TBB is the technique by which a piece of lung parenchyma is obtained using flexible forceps positioned distally via FB. TBB specimens can be obtained blindly or with guidance by fluoroscopy, computed tomography, or radial-probe endobronchial ultrasonography. In many instances TBB can obviate the need for an open-lung biopsy; however, certain conditions, such as interstitial lung diseases, generally require larger tissue samples than those that can be obtained bronchoscopically.
- TBB is diagnostically useful in 38–79% of patients (average sensitivity, 52%), depending upon the underlying disease.
- For example, in sarcoidosis, TBB has a diagnostic yield of 40–90%,<sup>147, 148</sup> although later studies have indicated that endobronchial ultrasound–guided TBNA of mediastinal/hilar nodes may have a greater diagnostic yield.<sup>149</sup> TBB has also been shown to be diagnostic in up to 10–40% of cases of pulmonary Langerhans cell histiocytosis,<sup>150</sup> 88–97% in Pneumocystis jirovecii pneumonia,<sup>111, 151</sup> and 57–79% in lung infections caused by Mycobacterium tuberculosis.<sup>152</sup> In patients suspected of having pulmonary alveolar proteinosis, its diagnostic yield has been reported to be as high as 100%.

- The diagnostic yield of TBB increases with the number of biopsy specimens obtained. 153 Usually, 6 to 10 biopsy specimens are obtained under fluoroscopic guidance. However, the use of fluoroscopy is not mandatory in patients with diffuse parenchymal disease, and biopsy specimens can be obtained by assessing the proximity to the pleura as guided by the patient's perception of chest pain. It is highly recommended that a large (7.3-mm cusp size), fenestrated, crocodile-type biopsy forceps should be used to obtain tissue of an adequate size without crush artifact.
- Compared to cutting forceps, crocodile forceps are considered to provide larger pieces of tissue by tearing rather than cutting. The yield of TBB for malignant peripheral lesions more than 2 cm in diameter was also reported to be 70% in one study, even without fluoroscopic guidance. 154 When performed in association with bronchial brushings and TBNA, TBB adds to the diagnostic yield of FB for peripheral lung cancers.

- Pneumothorax and hemorrhage are the most feared complications after TBB, with an incidence of up to 5% of cases.
- Renal insufficiency (blood urea nitrogen level >30 mg/dL [10.7 mmol/L] and creatinine level >3 mg/dL [0.27 mmol/L]) and other coagulopathies are considered risk factors for bleeding after TBB.
- Although there are no scientific data, there is a prevailing notion among bronchoscopists that IV vasopressin (desmopressin, DDAVP [1-deamino-8-D-arginine vasopressin]) 3 to 4 hours before TBB in patients with uremia or those who are on dialysis may reduce the risk of bleeding. Bleeding after the TBB is from the bronchial circulation, and moderate pulmonary hypertension is not a contraindication for the procedure.

- TBB can be safely performed while patients are receiving aspirin or nonsteroidal anti-inflammatory drugs; however, clopidogrel bisulfate should be withheld for at least 5 to 7 days before the procedure.
- Wedging the tip of the bronchoscope in the segment of interest before obtaining a TBB is highly recommended to prevent spilling of the blood in other areas and resultant hypoxemia. A 4-minute wait before dislodging the bronchoscope allows enough time for clot formation and adds to the safety of the procedure.

۲۲- مردی با سابقه بیماری قلبی و مصرف aspirin و clopidogrol به دلیل یک ضایعه مشکوک به تومور کاندید برونکوسکوپی می باشد چه توصیه ای قبل از برونکوسکوپی می نمایید؟

قطع اسپیرین و کلوپیدگرویل بمدت یک هفته  
قطع اسپیرین به مدت یک هفته وادامه کلوپیدگرویل  
قطع کلوپیدگرویل به مدت یک هفته وادامه اسپیرین  
احتیاج به قطع دارو نمی باشد

- TBB can be safely performed while patients are receiving aspirin or nonsteroidal anti-inflammatory drugs; however, clopidogrel bisulfate should be withheld for at least 5 to 7 days before the procedure.

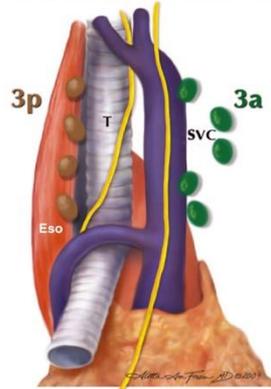
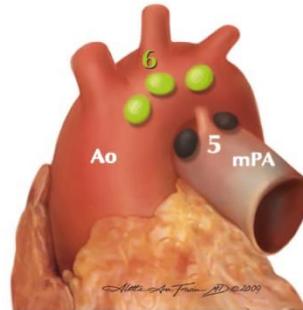
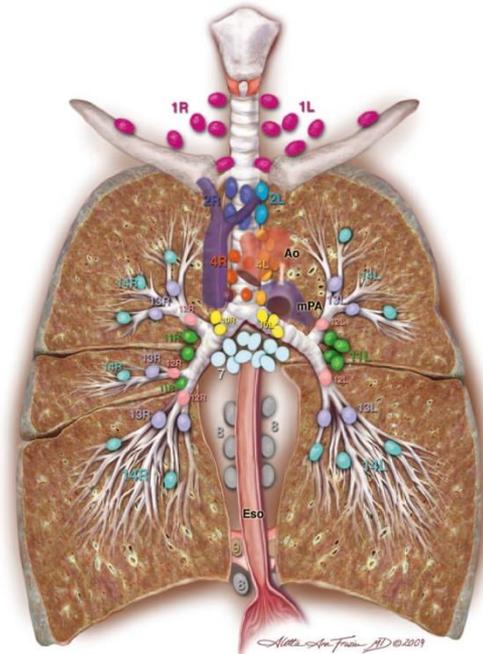
نمونه برداری از غدد لنفاوی به روش اولترا سونوگرافی اندوبرونشیال EBUS در تمام نواحی زیر قابل انجام است، بجز:

پاراازوفژیال تحتانی

High Mediastinal

پاراتراکئال

هیلار



**Supraclavicular zone**

- 1 Low cervical, supraclavicular, and sternal notch nodes

**SUPERIOR MEDIASTINAL NODES**

*Upper zone*

- 2R Upper Paratracheal (right)
- 2L Upper Paratracheal (left)
- 3a Prevascular
- 3p Retrotracheal
- 4R Lower Paratracheal (right)
- 4L Lower Paratracheal (left)

**AORTIC NODES**

*AP zone*

- 5 Subaortic
- 6 Para-aortic (ascending aorta or phrenic)

**INFERIOR MEDIASTINAL NODES**

*Subcarinal zone*

- 7 Subcarinal

*Lower zone*

- 8 Paraesophageal (below carina)
- 9 Pulmonary ligament

**N1 NODES**

*Hilar/Interlobar zone*

- 10 Hilar
- 11 Interlobar

*Peripheral zone*

- 12 Lobar
- 13 Segmental
- 14 Subsegmental

در بیماری که متعاقب ورود جسم خارجی در دستگاه تنفسی تحتانی دچار دیسترس قابل توجه تنفسی شده است و در یک مرکز مجهز درمانی بستری شده است. کدام شیوه درمانی ارجحیت بیشتری نسبت به سایرین دارد؟

Rigid bronchoscopy

Flexible bronchoscopy

توراکوتومی

VATS

- Foreign body aspiration is one of the most common indications for therapeutic bronchoscopy. There is a bimodal incidence of airway aspiration, peaking in children 1 to 2 years of age and in adults older than 70 years. Risk factors for aspiration in adults include alcohol intoxication, sedative and hypnotic drug use, poor dentition, senility, seizure, trauma, swallowing impairment, parkinsonism, and general anesthesia. In adults foreign bodies are most commonly found in the right-sided airways but in children are found equally in the left and right owing to the equal size and angulation of the main bronchi. Because a history of aspiration is obtained in less than 50% of patients, and visible foreign bodies can be identified on chest radiography in less than 10% of cases, a high index of suspicion is required

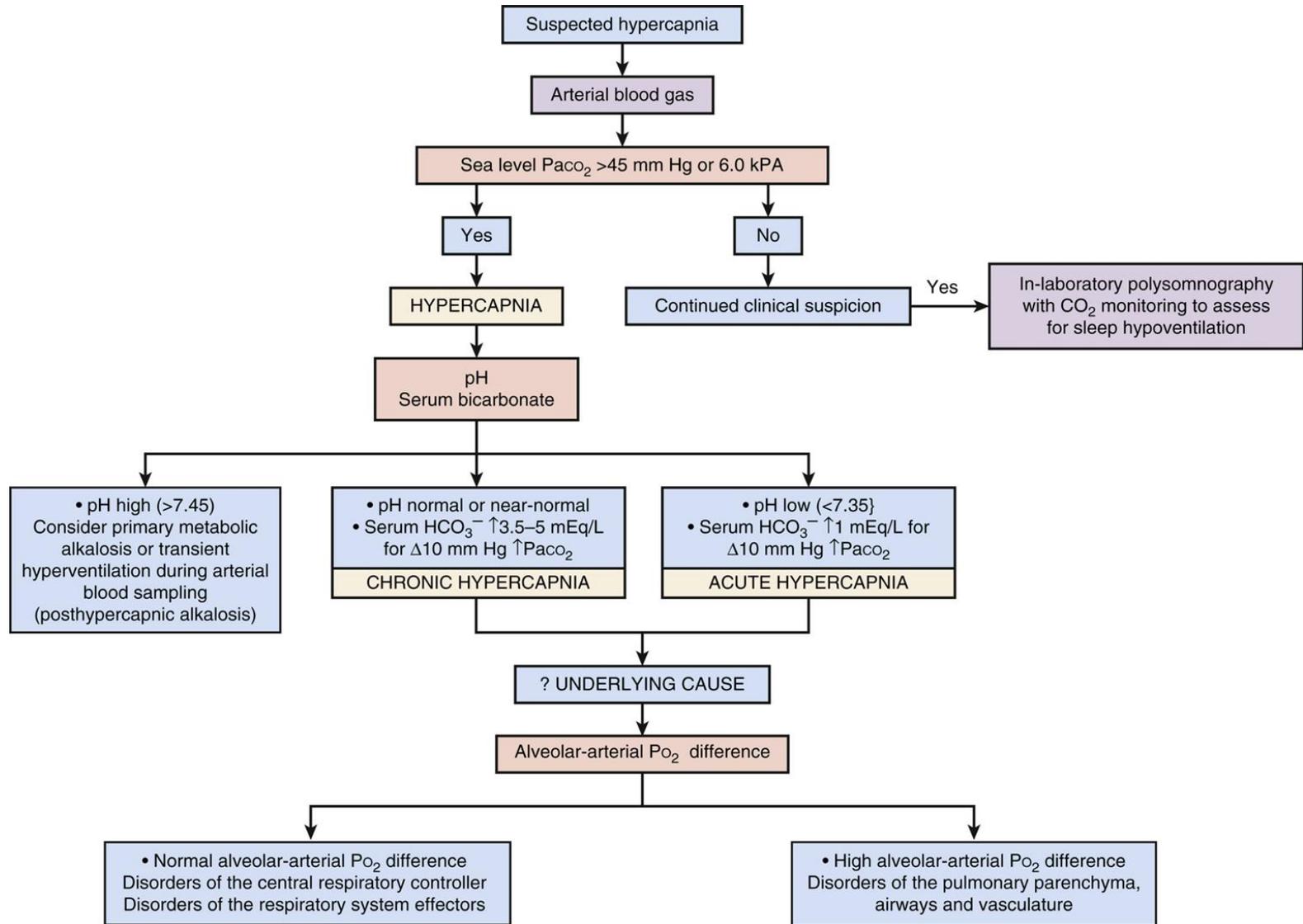
- Even with the recent increase in training in rigid bronchoscopy, the flexible bronchoscope remains an essential tool in therapeutic bronchoscopy. It is used in almost every rigid bronchoscopic procedure and, when rigid bronchoscopy is not available, can also be used as the only bronchoscope for foreign body removal, tumor excision/tumor destruction, bronchial thermoplasty, bronchoscopic lung volume reduction, and balloon dilation.

۲۶- در بیماری که PCO<sub>2</sub> شریانی 50 میلی متر جیوه و گرادیان (A-a)P<sub>O</sub><sub>2</sub> برابر با 25 باشد و میزان اکسیژن شریانی 45 میلی متر جیوه باشد محتمل ترین تشخیص کدام است؟

آنمی  
شانت راست به چپ  
بیماری نوروماسکولار  
نارسایی قلبی

... caused from decrease of alveolar ventilation, low gas exchange and ventilation-perfusion relationship

<b>Mechanism of Hypoxemia</b>	<b>(A-a)P<sub>o2</sub></b>	<b>Response of Arterial P<sub>o2</sub> to Increase in F<sub>io2</sub></b>
Low ventilation-perfusion	Increased	Improves
Shunt	Increased	Minimal improvement
Diffusion limitation	Increased	Improves
Hypercarbia	Normal	Improves
Decreased P <sub>io2</sub>	Normal	Improves



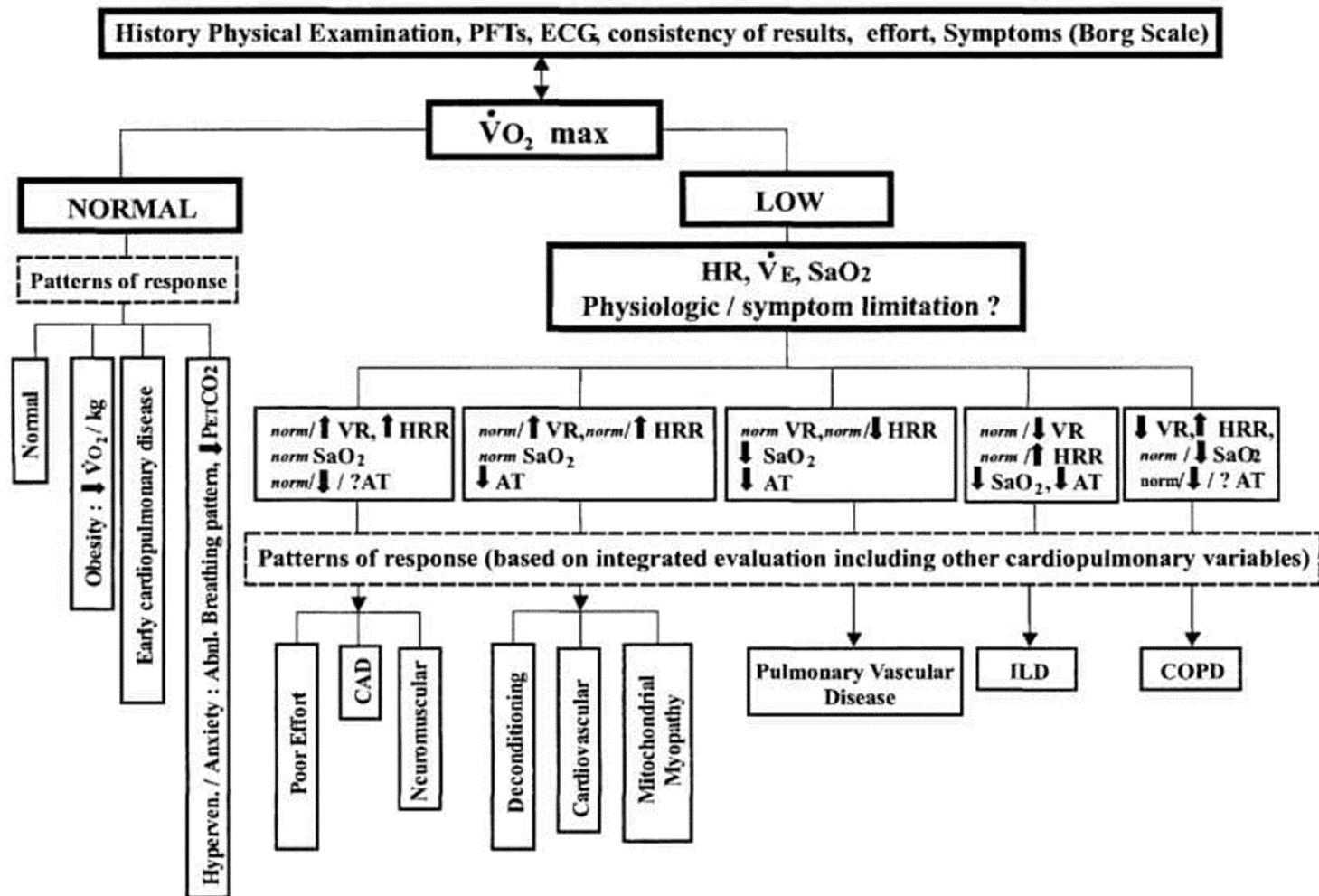
از مرد 50 ساله با سابقه P/Y 10 مصرف سیگار و سابقه فشارخون بالا با شکایت از تنگی نفس فعالیتی تست ورزش قلبی - ریوی به عمل می آید. در تست به عمل آمده  $VO_2\text{peak}$  پایین تر از حد نرمال بوده در حالی که AT در محدوده نرمال قابل تفسیر می باشد. رزرو تنفسی بیمار نرمال بوده در طی ورزش بیمار از درد سینه شاکی نبوده و تغییرات نوار قلب به نفع ایسکمی مشاهده نشده است  
محتمل ترین علت پایین بودن  $VO_2\text{peak}$  در این بیمار کدام است؟

تلاش ناکافی

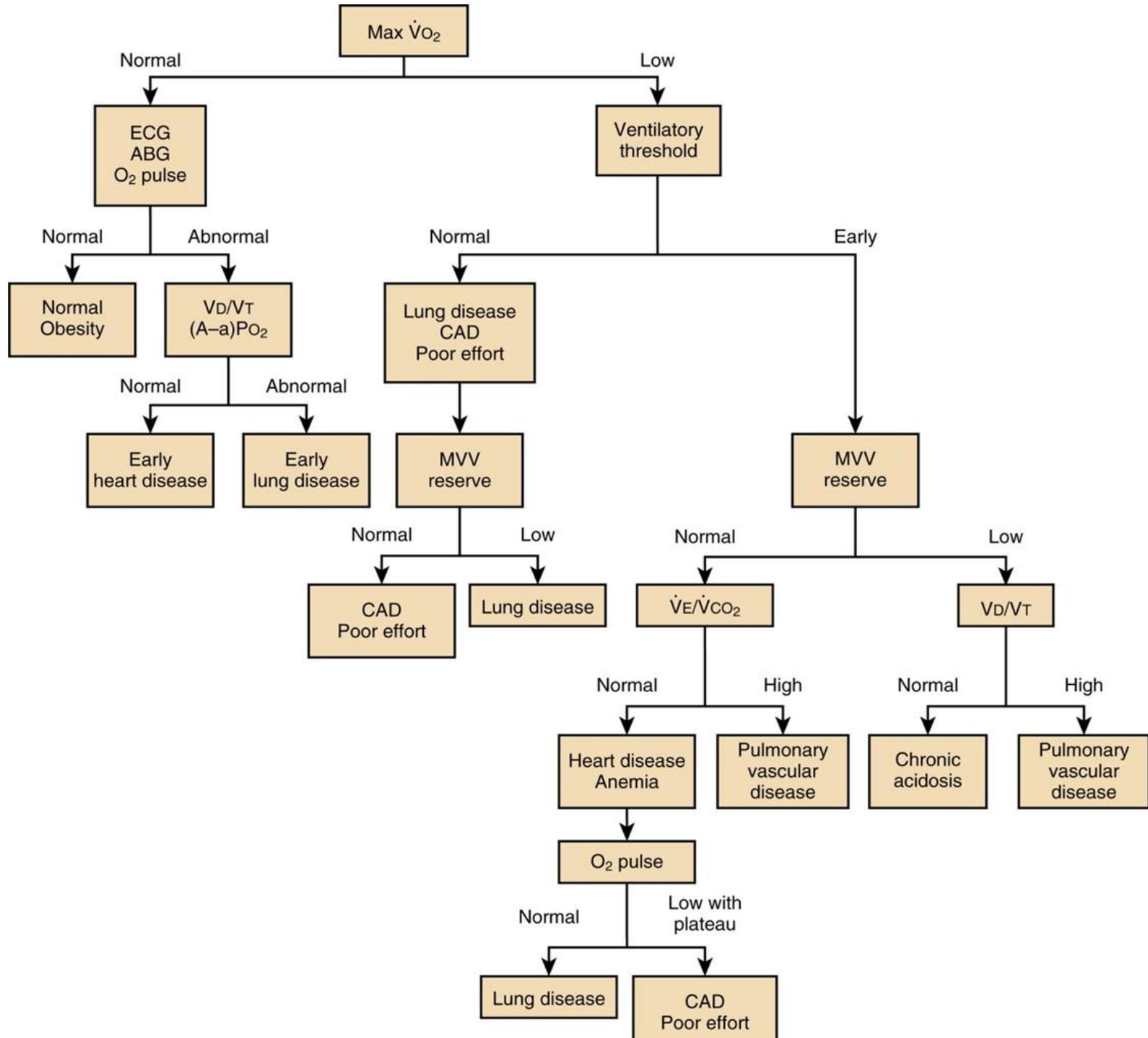
نارسایی قلبی

درگیری عروق ریوی

بیماری انسدادی راه هوایی



**Figure 10.** Basic strategy for the interpretation of peak CPET results begins with consideration of patient information and reasons for testing and with analysis of  $\dot{V}O_2$  max and subsequently simultaneous assessment of HR,  $\dot{V}_E$ , and  $SaO_2$ . The AT may be helpful at this point. Determination of physiologic limitation is accomplished by analysis of ventilatory reserve ( $\dot{V}_E$ /MVV) and heart rate reserve (HRR). Additional CPET measurements and patterns of response are established and (likely) associated clinical entities are considered, resulting in more specific diagnostic pathways (28). CAD = coronary artery disease.



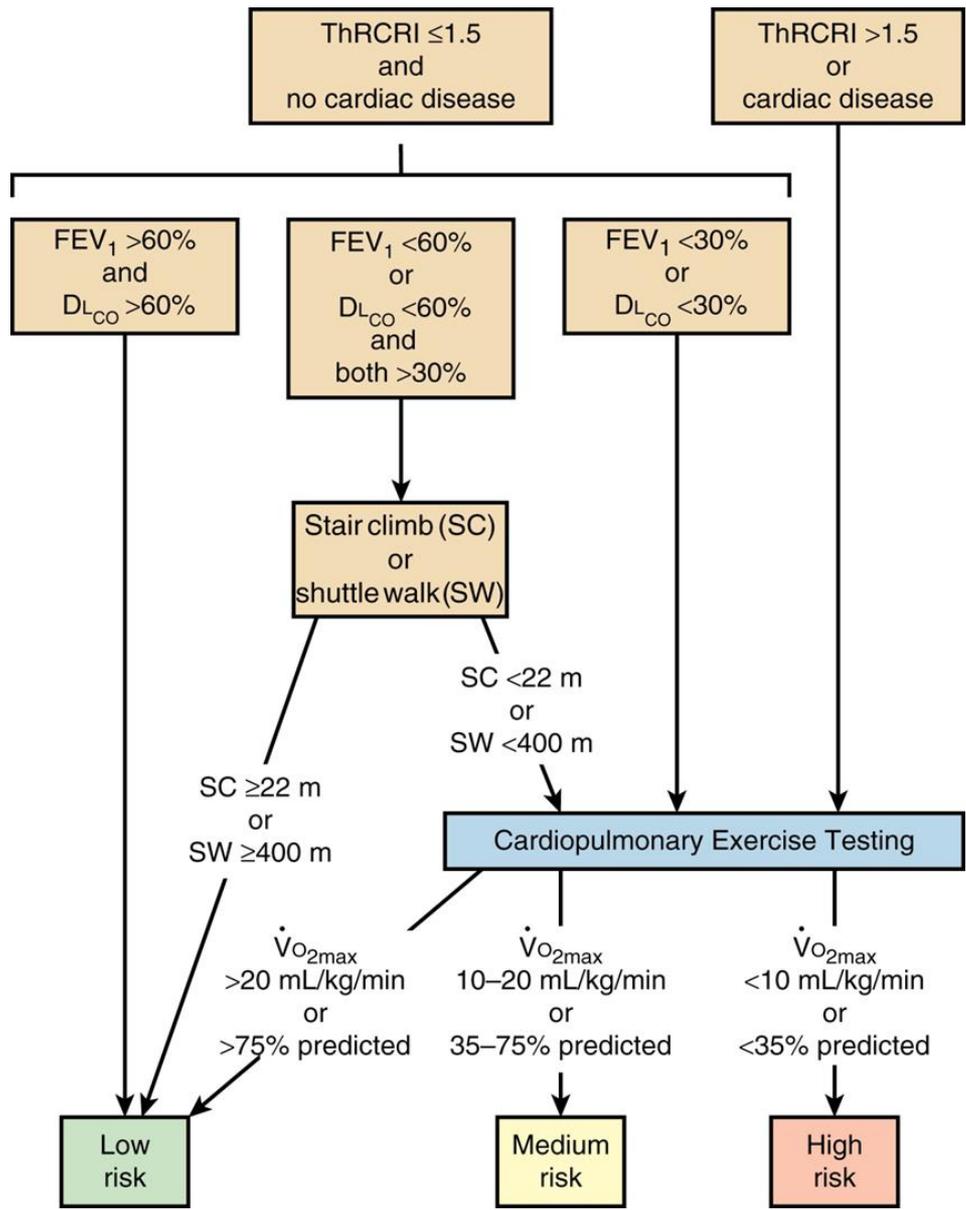
مرد 62 ساله سیگاری به علت کانسر ریه کاندید جراحی رزکسیون است در ارزیابی قبل از عمل مشکل قلبی و کلیوی ندارد مقادیر 32% در تست های FEV1,DLCO دارد اقدام بعدی کدام است؟

Low - technology exercise test

CPET

بیمار را کاندید اقدامات غیر جراحی می کنیم

Sub lobar resection



- To calculate a postoperative predictive FEV 1 from PFT is relatively straightforward. As discussed elsewhere in this textbook, the lung is made up of lobes that are further subdivided into segments. In general, there are 9 to 10 segments in each lung, for a total of 19. The clinician needs to determine how many segments will be resected (e.g., three from the right upper lobe) and use this as a fraction to calculate the predictive postoperative value.
- The following equation is most commonly used to calculate estimated postoperative FEV 1 :
- $$\text{epoFEV1} = \text{preFEV1} \times \frac{19 - \text{segments to be removed}}{19}$$
- where epoFEV 1 is estimated postoperative FEV 1 and preFEV 1 is preoperative FEV 1 . Segments include right (upper 3; middle 2; lower 5) and left (upper 3; lingula 2; lower 4).
- Using this equation, the following example is given. A patient with an FEV 1 of 1.3 L is planning to undergo a right upper lobectomy. Resection of the right upper lobe will result in removal of three segments. Therefore, at the conclusion of the resection, the patient will retain 84% of the original lung parenchyma ( $([19 - 3]/19 = 84\%)$ ). Thus, the expected postoperative FEV 1 should be about 1.1 L, and thus the patient should be able tolerate the resection.

۳۲- در مورد ارتباط برگشت اسید معده به داخل مری GERD و سرفه تمام عبارات زیر صحیح است، بجز:

تست منفی مانیتورینگ PH مری، وجود GERD را رد می کند.  
عدم پاسخ یک هفته ای علایم به مهار کننده پروتون به معنای رد کننده ریفلاکس معده به مری است.  
تزریق لیدوکائین در انتهای مری و استفاده از آنتی کلی نرژیک در مهار سرفه موثر است.  
هنوز نقش اثبات شده ای برای اثر بخشی Domperidon وجود ندارد.

- GERD, the movement of gastric contents from the stomach into the esophagus, usually causes heartburn, chest pain, a sour taste, regurgitation, and often a chronic cough. The mechanisms that link cough with reflux remain unclear. An esophageal-tracheobronchial cough reflex mechanism triggered by acid is based on the observation that cough can be induced by perfusion of the distal esophagus with acid solutions and can be suppressed by perfusion of the distal esophagus with lidocaine and by inhalation of an anticholinergic agent, ipratropium bromide.<sup>51</sup> In addition, the majority of cough episodes are temporally related to reflux episodes. A heightened cough reflex to capsaicin in GERD patients provides evidence for sensitization of this pathway. Not only the acid but the non-acid reflux components, such as the liquid, gas, and pepsin, have been proposed as stimulating cough.
- Patients with GERD may have laryngopharyngeal reflux with evidence of inflammation in the upper airway and, in these patients, cough may result from a direct effect of refluxate reaching the cough receptors in the larynx and trachea. In symptomatic GERD, increases in tracheal acidity with a fall in pH to less than 4 are reported during episodes of reflux.<sup>53</sup> In the presence of reflux and microaspiration, laryngeal symptoms may be present, with dysphonia, hoarseness, frequent throat clearing, a globus sensation (e.g., a feeling of a lump in the throat), and sore throat. Often, posterior vocal cord laryngeal inflammation with edema, erythema, contact ulceration, pachydermia (a thickened mucosa), and/or granuloma is visible. Ineffective esophageal peristalsis has been reported in chronic cough, and this may increase the exposure time of the larynx and pharynx to any refluxate.

- Monitoring acid reflux by 24-hour ambulatory pH, together with monitoring non-acid reflux by intraluminal impedance in the proximal and distal esophagus, with analysis of the temporal relationship between the reflux episodes and cough, may be useful. A positive association between acid reflux, non-acid reflux, and cough sounds on an ambulatory cough counter has been reported, together with a heightened cough reflex sensitivity. 54 Other tests include esophageal manometry to measure dysmotility, particularly associated with reflux episodes; upper gastrointestinal (GI) contrast series; or an upper GI endoscopy.
- Conservative measures, such as weight reduction; a high-protein, low-fat diet; elevation of the head of the bed; and avoidance of coffee and smoking, may be useful. Reduction of acid production from the stomach can be achieved with either H<sub>2</sub>-histamine blockers or proton pump inhibitors but, of interest, these agents have not been shown to benefit the chronic cough. 55 It is recommended that those with objective evidence of heightened esophageal acid exposure on pH monitoring or with complaints of heartburn should benefit from acid-suppressive therapy provided for 2 months. There is no good evidence for the use of prokinetics, such as domperidone or metoclopramide, which are associated with potential side effects. The effectiveness of antireflux surgery, such as laparoscopic fundoplication in patients with chronic cough associated with GERD disease whose cough has failed to respond to medical therapy, is unclear.

۳۳- بیمار مرد 45 ساله با درد قفسه سینه در ناحیه رترو استرنال و مکرر و طول کشیده مراجعه کرده است. بررسی های قلبی نرمال می باشد. کدامیک از موارد زیر به عنوان علت درد قفسه سینه وی محتمل تر است؟

اسپاسم منتشر مری  
ریفلاکس  
مسایل سایکولوژیک  
دردهای ماسکولو اسکلتال

- The term noncardiac chest pain is used to describe entities with pain resembling angina. There are three main categories of extracardiac disease that cause angina-like chest pain, namely
- (1) musculoskeletal disorders of the chest wall, which may account for 10–20% of cases;
- (2) a variety of esophageal disorders, particularly gastroesophageal reflux, which may cause 30–40%; and
- (3) psychological factors, which may explain up to 50% of the total.

۴۱- در کدامیک از حالات ایجاد شده در بیوتروریسم علیرغم شواهد نارسائی تنفسی موجود در گازهای خون شریانی احتمال طبیعی بودن رادیوگرافی قفسه سینه بیشتر است؟

آنتراکس

بوتولیسم

آبله

تولارمی

Disease	Signs and Symptoms	Incubation Time (Range)	Person-to-Person Transmission	Isolation	Diagnosis *	Postexposure Prophylaxis	Treatment †
<b>Anthrax</b> ( <i>Bacillus anthracis</i> )							
Inhalation	Flu-like symptoms including fever and chills, shortness of breath, cough, sweats, fatigue, and myalgias May also have confusion, headache, nausea, vomiting or stomach pain	1–43 days (range, up to 60 days)	None	Standard	CXR with widened mediastinum; cultures of sputum and blood	Antibiotics, vaccine	Antibiotics, antitoxin
Cutaneous	Initially a group of small blisters or bumps that may itch Swelling may develop around the sore; blisters develop into a painless skin sore (ulcer) with a necrotic (black) center; lesions most commonly on face, neck, arms, or hands	5–7 days (range, 1–12 days)	Rarely	Contact	Cultures of blood and lesion (swab)		
Gastrointestinal	Fever and chills, lymphadenopathy (neck), pharyngitis, dysphagia, nausea and vomiting (may be bloody), diarrhea, headache, abdominal pain, and flushing and conjunctivitis	1–6 days	None	Standard	Cultures of blood and stool		
Botulism ( <i>Clostridium botulinum</i> toxin) via inhalation	Double or blurred vision, ptosis, dysarthria, dysphagia, dysphonia, shortness of breath, dry mouth, muscle weakness; ascending flaccid paralysis Suggested by absence of fever, symmetrical neurologic deficits, patient responsive, normal or slow heart rate with normal blood pressure, and no sensory deficits with exception of blurred vision	12–72 hours (2 hours to 8 days)	None	Standard	Presumptive based on clinical findings Identification of toxin in serum, stool, or vomitus Culture of stool, wound, or food source	None	Antitoxin, botulinum immune globulin
Pneumonic plague ( <i>Yersinia pestis</i> )	Fever, headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery mucus Septicemic plague may develop	1–4 days	Via respiratory droplets	Droplet	Cultures of blood (usually positive), sputum, bronchial washings	Antibiotics	Antibiotics
Smallpox (Variola)	Initial stage (2–4 days): high fever, prostration, myalgias, vomiting Rash: starts as small red spots on tongue and in mouth, changes to sores that rupture, then rash on face that spreads to arms and legs, and then to hands and feet	10–14 days (range, 7–19 days)	Via airborne spread	Contact, airborne (special precautions required) †	PCR of clinical specimens (i.e., skin lesions, NP swab, blood), isolation of small virus, serology **	Vaccine	Vaccine, tecovirimat

۶۴- مردی 35 ساله کارگر سنگبری جهت بررسی شغلی مراجعه می کند. در جهت پیگیری عوارض به عنوان اولین اقدام کدامیک ارجح تر باشد؟

رادیوگرافی ساده سینه  
سی تی اسکن ریه  
میزان انتشار گاز دی اکسید کربن (DLCO)  
اندازه گیری Vital capacity و FEV1

- Chest radiographs have been the cornerstone of surveillance for pneumoconiosis in the workplace given wide international availability, portability, and low cost. The International Labour Office International Classification of Radiographs of Pneumoconioses 2 provides a widely accepted framework for evaluation of posteroanterior chest radiographs taken for medical surveillance of occupational lung disease. The system requires users to compare the images of the subject with standard calibration radiographs to classify the shape, size, and profusion (or abundance) of pneumoconiotic opacities. This system improves consistency in the reading of pulmonary parenchymal and pleural disease, and places an individual case in the context of available epidemiologic information.

۶۵- مهمترین عارضه هیدروکربن های پلی سیکلیک آروماتیک در هوا بر روی سیستم تنفسی کدامیک از موارد زیر می باشد؟

برونکو اسپاسم

کانسر ریه

افزایش پاسخ به آلرژن ها

تشدید بیماری COPD

Major Pollutants Associated With Adverse Pulmonary Effects

<b>Pollutant</b>	<b>Outdoor Sources</b>	<b>Indoor Sources</b>	
Particulate matter	Motor vehicle exhaust, power plants	Tobacco and wood smoke	Exacerbations of asthma and COPD, in
Sulfur oxides	Power plants, oil refineries, smelters	Kerosene space heaters	Bronchoconstriction
Nitrogen oxides	Motor vehicle exhaust, power plants, oil refineries	Gas stoves and furnaces, kerosene space heaters	Airway injury (respiratory bronchiolitis)
Ozone	Motor vehicle exhaust	Aircraft cabins, welding, copiers, ozone generators	Airway injury (respiratory bronchiolitis) allergen
Radon	None	Residential basements	Lung cancer
Polycyclic aromatic hydrocarbons	Diesel exhaust	Tobacco smoke	Lung cancer

۶۶- دختر جوانی با ماده علف کش اقدام به خودکشی کرده است. به دنبال آن دچار علایم شدید گوارشی و درگیری کلیوی شده است. بعد از انتقال به بیمارستان و بستری در ICU از روز دوم دچار دیسترس پیشرونده تنفسی و هیپوکسی شده است. کدامیک از جملات زیر صحیح است؟

تجویز اکسیژن به این بیمار می تواند نتیجه نهایی را بدتر کند  
سریع ترین راه درمان استفاده از آنتی دوت اختصاصی آن است  
درمان اساسی انجام هموپرفوزیون در این بیمار است  
سطح پلاسمایی سم نقشی در تعیین عاقبت بیمار ندارد

- The mechanism of paraquat toxicity is attributed to the generation of superoxide radicals that may be partly iron dependent. Consistent with an oxidant mechanism, supplemental oxygen and radiation therapy may worsen the outcome; there are no known antidotes for paraquat poisoning, and enhanced elimination such as by hemoperfusion has not demonstrated a clear benefit. 22 , 282 Plasma paraquat levels can be determined and may have a use in predicting outcome. 287 Data suggest a possible therapeutic benefit from immunosuppression, but this awaits confirmation through controlled clinical trials. 23 , 282 Death results from multiorgan failure, which usually happens within 1 to 2 weeks but may be observed up to 6 weeks after ingestion.

۶۸- جوان 36 ساله چند ساعت پس از صعود به ارتفاع 3000 متر به تدریج دچار سردرد، تهوع، بی اشتهایی، احساس ضعف و استفراغ می شود. سابقه بیماری خاصی ندارد. کدام درمان را پیشنهاد می کنید؟

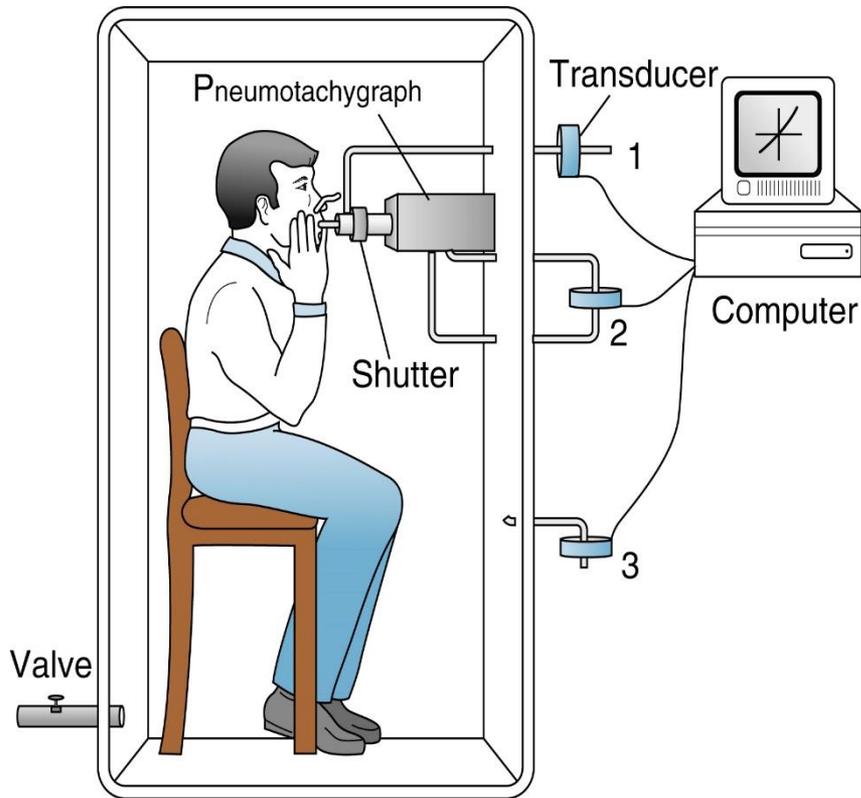
قرص استازولامید 250 میلی گرم هر 12 ساعت  
قرص دگزامتازون 2 میلی گرم هر 6 ساعت  
قرص نیفدیپین 30 میلی گرم هر 12 ساعت  
قرص تادالافیل 10 میلی گرم هر 12 ساعت

### Dosing and Use of Altitude-Illness Medications

Medication	Indication	Route	Dosage
Acetazolamide	AMS, HACE prevention	Oral	125 mg q12h Pediatrics: 2.5 mg/kg q12h (maximum, 125 mg/dose)
	AMS treatment	Oral	250 mg q12h Pediatrics: 2.5 mg/kg q12h (maximum: 125 mg per dose)
Dexamethasone	AMS, HACE prevention	Oral	2 mg q6h or 4 mg q12h Pediatrics: Should not be used for prophylaxis
	AMS, HACE treatment	Oral, IV, IM	AMS: 4 mg q6h HACE: 8 mg once then 4 mg q6h Pediatrics: 0.15 mg/kg/dose q6h (maximum: 4 mg per dose)
Ibuprofen	AMS prevention	Oral	600 mg q8h
Nifedipine	HAPE prevention	Oral	30 mg ER version q12h or 20 mg ER version q8h
	HAPE treatment	Oral	30 mg ER version q12h or 20 mg ER version q8h
Tadalafil	HAPE prevention	Oral	10 mg q12h
Sildenafil	HAPE prevention	Oral	50 mg q8h

تمامی جملات زیر در خصوص اندازه گیری مقادیر فشار و حجم های ریوی در روش **Body Plethysmography** صحیح است بجز؟

- الف) اندازه گیری صحیح فشار الوئیل (Palv) باید در زمان باز بودن Shutter انجام گیرد. —
- ب) آلفا ( $\alpha$ ) نسبت تغییرات فشار دهان فرد به تغییرات فشار دستگاه در حالت Panting است.
- ج) بتا ( $\beta$ ) نسبت تغییرات فشار دستگاه به تغییرات فلو در حالت Panting است.
- د) اندازه گیری صحیح Thoracic Gas Volume (TGV) و FRC باید در زمان بسته بودن Shutter انجام پذیرد.



- The subject breathes through a shutter/pneumotachygraph. The shutter is open during tidal breathing and closed for measurements of airway resistance. When the shutter is closed, mouth pressure (equal to alveolar pressure at no flow) is measured by a pressure transducer ( 1 ). The pneumotachygraph measures airflow with another transducer ( 2 ), and the flow signal is integrated to volume electronically. The plethysmograph pressure is measured by a third transducer ( 3 ). The signals from the three transducers are processed by a computer. Excess box pressure caused by temperature changes when the subject sits in the closed box is vented through a valve.

- In practice,  $R_{aw}$  is determined by measuring the slope ( $\beta$ ) of a curve of plethysmograph pressure ( x -axis) displayed against airflow ( y -axis) on a computer monitor during rapid, shallow breathing (panting) through a pneumotachygraph within the plethysmograph. Air is exchanged between the lungs and the box without communication to the air outside the box. Then a shutter is closed across the mouthpiece, and the slope ( $\alpha$ ) of plethysmographic pressure ( x -axis) displayed against  $P_{mouth}$  ( y -axis) is measured during panting under static conditions. Because  $P_{mouth}$  equals  $P_{alv}$  in a static system, the closed shutter step serves two purposes. First, it relates changes in plethysmographic pressure to changes in  $P_{alv}$  in each subject.  $P_{alv}$  is thus effectively calculated from plethysmographic pressure changes with the shutter open, provided that the ratio of lung to plethysmographic gas volume is constant; this is true because  $P_{alv}$  for a given plethysmographic pressure is the same whether or not flow is interrupted. Second, it relates  $R_{aw}$  to a particular thoracic gas volume.

- The thoracic gas volume ( $V$ , also often referred to as TGV) is the compressible gas in the thorax, whether or not it is in free communication with airways. In the process of determining the  $V$ , the airway is occluded, and the subject makes small inspiratory and expiratory efforts against the occluded airway. The thoracic gas volume usually measured is slightly larger than FRC unless the shutter is closed precisely after a normal tidal volume is exhaled. Connecting the mouthpiece assembly to a valve and spirometer (or pneumotachygraph and integrator), or using a pressure-volume plethysmograph, makes it possible to measure TLC and all its subdivisions in conjunction with the measurement of thoracic gas volume.

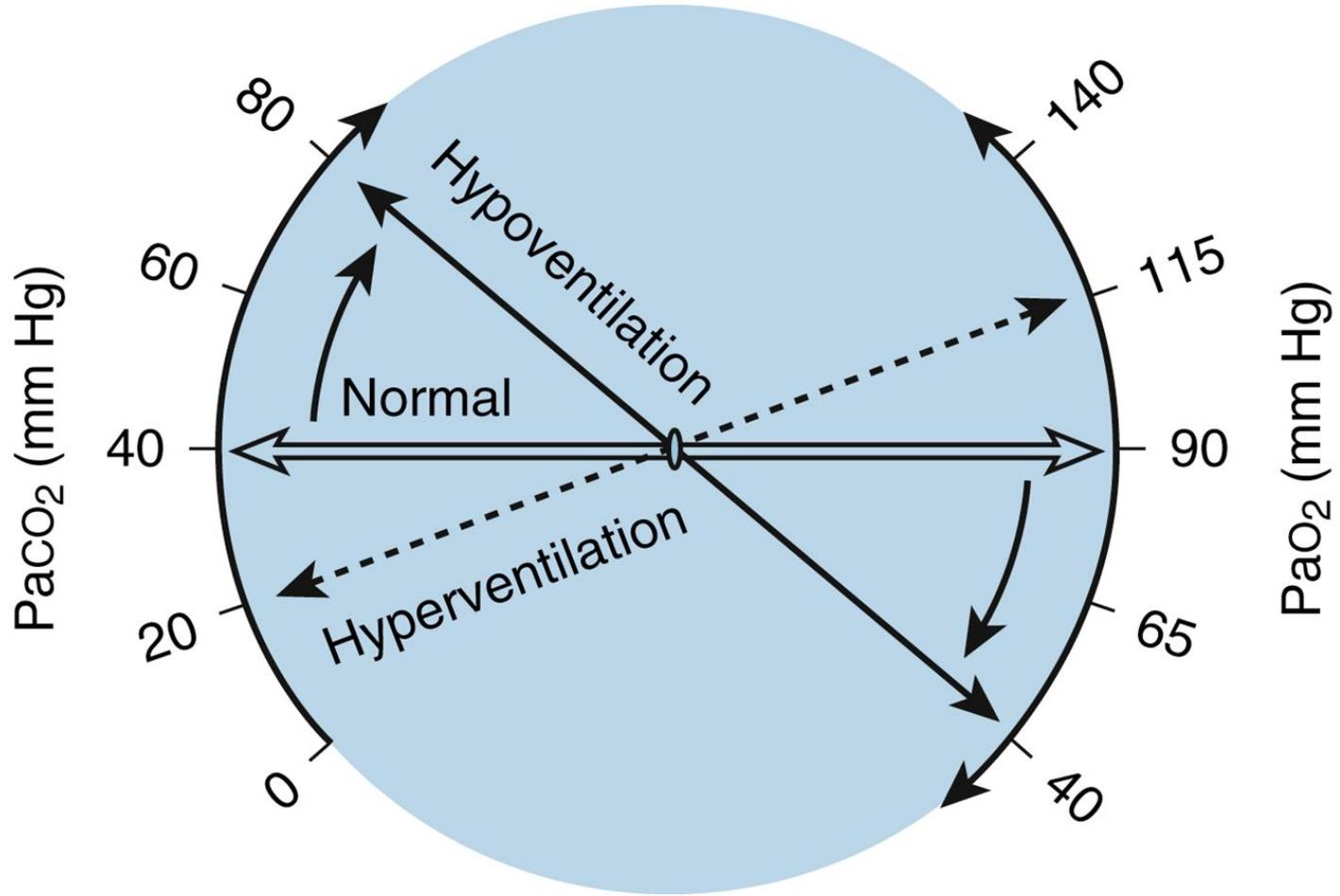
در بیمار ۲۰ ساله به دنبال مسمومیت با باربیتورات، بررسی گازهای خون شریانی در هوای اتاق در سطح دریا انجام شده است، رادیوگرافی قفسه سینه بیمار نرمال است  $PCO_2$  خون شریانی بیمار  $60\text{mmHg}$  است، انتظار می رود میزان  $PO_2$  خون شریانی بیمار چقدر باشد؟

الف)  $50\text{ mm/Hg}$

ب)  $65\text{ mm/Hg}$

ج)  $75\text{ mm/Hg}$

د)  $45\text{ mm/Hg}$



کمیبود سورفاکتانت A و D شانس ابتلا به کدام عفونت را افزایش می دهد؟

۴

الف) استافیلوکوک

ب) اسپرژیلوس

ج) آنفولانزا

د) لژیونلا

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی: ۱۳۶۴۷۴

نام بیمار : .....

تاریخ مراجعه : .....

« هوالشافی »

سوزش گلو : (دائمه برگشت)

innate immunity

ایمنی ذاتی

Phagocytosis

Paradox

الفعل به پارسی

کوتاه کتاب در ریه طبیعی

افزایش کتاب در ریه

دائره

(رئیتوی) افزایش گلو

RSV, Influenza, Viruses

PCP, Fungi, Mycobacterium

Mohsen Sadeghi M.D

Internist

Assistant Professor

دکتر محسن صادقی



متخصص بیماری های داخلی

عضو هیئت علمی دانشگاه علوم پزشکی شهید بهشتی

نظام پزشکی : ۱۳۶۴۷۴

نام بیمار : .....

تاریخ مراجعه : .....

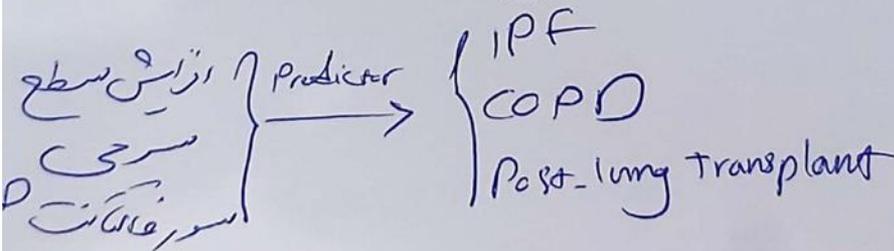
« هوالتافی »

سورفالتان D (واسته ریکم)

- Pro inflammatory
- anti inflammatory

اثرات در عفونت های  
 ریوی، سل، توبرکولوز، هیستوپلازما

- PCP, ILID



Mohsen Sadeghi M.D

Internist

Assistant Professor

تمام موارد زیر کنتراندیکاسیون مطلق برونکوسکوپى است بجز؟

الف) عدم امکان اکسیژناسیون کافی در حین برونکوسکوپى

ب) انفارکتوس میوکارد اخیر

ج) کواگولوپاتی اصلاح نشده

د) عدم همکاری بیمار

## Contraindications for Flexible Bronchoscopy

### **ABSOLUTE**

Uncorrectable hypoxemia

Lack of patient cooperation

Lack of skilled personnel

Lack of appropriate equipment and facilities

Unstable angina

Uncontrolled arrhythmias

### **RELATIVE**

Unexplained or severe hypercarbia

Uncontrolled asthma

Uncorrectable coagulopathy

Unstable cervical spine

Need for a large tissue specimen for diagnosis

Debility, advanced age, malnutrition

بیمار با درد قفسه سینه، تب و تصویر گاز و مایع در مدیاستن در سی تی اسکن مراجعه نموده است. همه موارد ذیل به عنوان اتیولوژی بیماری مطرح می باشند. بجز؟

الف) عفونت ناحیه گردن

ب) سابقه انتوباسیون اخیر

ج) استفراغ شدید

د) دیسکسیون آنورت

-----  
Acute Mediastinitis: Causes and Clinical Settings

PERFORATION OF A THORACIC VISCUS
Forceful vomiting (Boerhaave syndrome)
Direct penetrating trauma to esophagus or trachea
Foreign body ingestion or aspiration
Iatrogenic complication of instrumentation: endoscopy, bronchoscopy, intubation or airway management, transesophageal echocardiography, central venous catheter placement
Erosion of carcinoma or necrotizing infection
DIRECT EXTENSION FROM OUTSIDE MEDIASTINUM
Descending necrotizing mediastinitis from pharyngeal, odontogenic origin
Pancreatitis
Pneumonia or empyema
Osteomyelitis of rib, vertebrae, or paraspinal abscess
MEDIASTINITIS AFTER CARDIOTHORACIC SURGERY
<b>SPONTANEOUS MEDIASTINITIS</b>
Hematogenous seeding, usually by <i>Streptococcus</i>
Hemorrhagic mediastinitis of inhalational anthrax

در یک مرکز مجهز برای عمل های جراحی کاهش وزن از شما برای مشاوره های قبل از عمل جراحی از نظر تحمل ریوی بیمار بطور روتین مشورت می شود. بر اساس شواهد علمی کدام اقدام ارجحیت دارد؟

الف) گرافی قفسه سینه رخ و نیمرخ

ب) تست های تنفسی اندازگیری حجم های ریوی

ج) بیکربنات سرم

د) البومین سرم

- Arterial blood gas analysis provides limited value for perioperative management, even before lung resections. 16 Identification of hypercapnia during preoperative evaluation does not substantially alter clinical risk stratification or perioperative management in most patients with chronic lung disease. Patients with hypercapnia at baseline would rarely escape clinical detection. As in the nonoperative setting, obtaining an arterial blood gas to evaluate new or worsened respiratory symptoms is reasonable. For patients with suspected or known untreated sleep apnea, serum bicarbonate may provide useful risk stratification information. Elevated serum bicarbonate in these patients suggests chronic carbon dioxide (CO<sub>2</sub>) retention and the presence of obesity hypoventilation syndrome or overlapping obstructive lung disease. The risk of perioperative complications is substantially higher in such patients, and the Society of Anesthesia and Sleep Medicine (SASM) recommends delaying nonurgent surgery for further evaluation of suspected sleep apnea with evidence of hypoxemia or CO<sub>2</sub> retention.

- Before surgery in patients with known OSA, clinicians should obtain their previous sleep study reports and document the severity and recommended positive airway pressure (PAP) settings. 17
- Patients using home PAP therapy should be encouraged to maintain compliance and instructed to bring their device to the hospital for perioperative use. 17
- For patients without diagnosed sleep apnea who have high STOP-BANG scores, SASM does not recommend delaying all surgical procedures for further sleep evaluation. 17
- Clinicians should advise patients and the perioperative team of the elevated risks related to potential undiagnosed and untreated sleep apnea and only delay surgery for patients with elevated STOP-BANG scores plus one of the following: uncontrolled or severe systemic disease (e.g., pulmonary hypertension), hypoxemia, or evidence of CO<sub>2</sub> retention (elevated arterial blood CO<sub>2</sub> or serum bicarbonate). 17

در درمان سرفه مزمن بالغین تمام موارد زیر صحیح است بجز:

- الف) در درمان سرفه ناشی از Post nasal drip انتخاب اول کورتیکواستروئید خوراکی و آنتی بیوتیک برای ده روز است.
- ب) برای درمان سرفه ناشی از آستم کورتیکواستروئید استنشاقی و اگونیست بتا تا ۶ ماه ادامه یابد.
- ج) اگر شواهد GERD وجود دارد درمان مهارکننده پمپ اسید ۲ ماه ادامه می باید.
- د) اضافه کردن دمپریدون به مهار کننده پمپ اسید، باعث تسریع در بهبودی نمی شود.

# Cough variant asthma

- Cough associated with asthma should be treated with a combination of inhaled corticosteroid therapy and long-acting  $\beta_2$ -adrenergic agonists, treatments that should be maintained over a prolonged period (3–6 months). In some patients with cough-variant asthma,  $\beta$ -adrenergic bronchodilators are effective antitussives. 48 Often, a trial of oral corticosteroids (e.g., prednisolone 40 mg/day for 2 weeks) may be recommended, particularly in those asthmatic patients who have had a cough despite being on adequate inhaled antiasthma medication.
- Cough-variant asthma may respond to leukotriene receptor antagonists. 49 Eosinophilic bronchitis responds well to inhaled or oral corticosteroid therapy.

- The best treatment is topical administration of corticosteroid drops in the head-down position, often with the concomitant use of antihistamines.
- Topical steroids offer a local effect with a minimum of side effects. On occasion, severe symptoms may be controlled initially by a short course of oral steroids, followed by topical therapy. A topical anticholinergic spray to the nose, such as ipratropium bromide, to dry excessive nasal secretions may provide additional benefit. A combination of topical corticosteroid, antihistamine, and anticholinergic treatments has been shown to benefit the chronic cough accompanying postnasal drip, along with an improvement in nasal discharge and endoscopic appearances. 40
- Topical decongestant vasoconstrictor sprays may be useful adjunct therapy for a few days, but rebound nasal obstruction may develop after prolonged use.
- Antibiotic therapy is necessary in the presence of acute sinusitis involving bacterial infection with mucopurulent secretions that have persisted for at least 10 days.

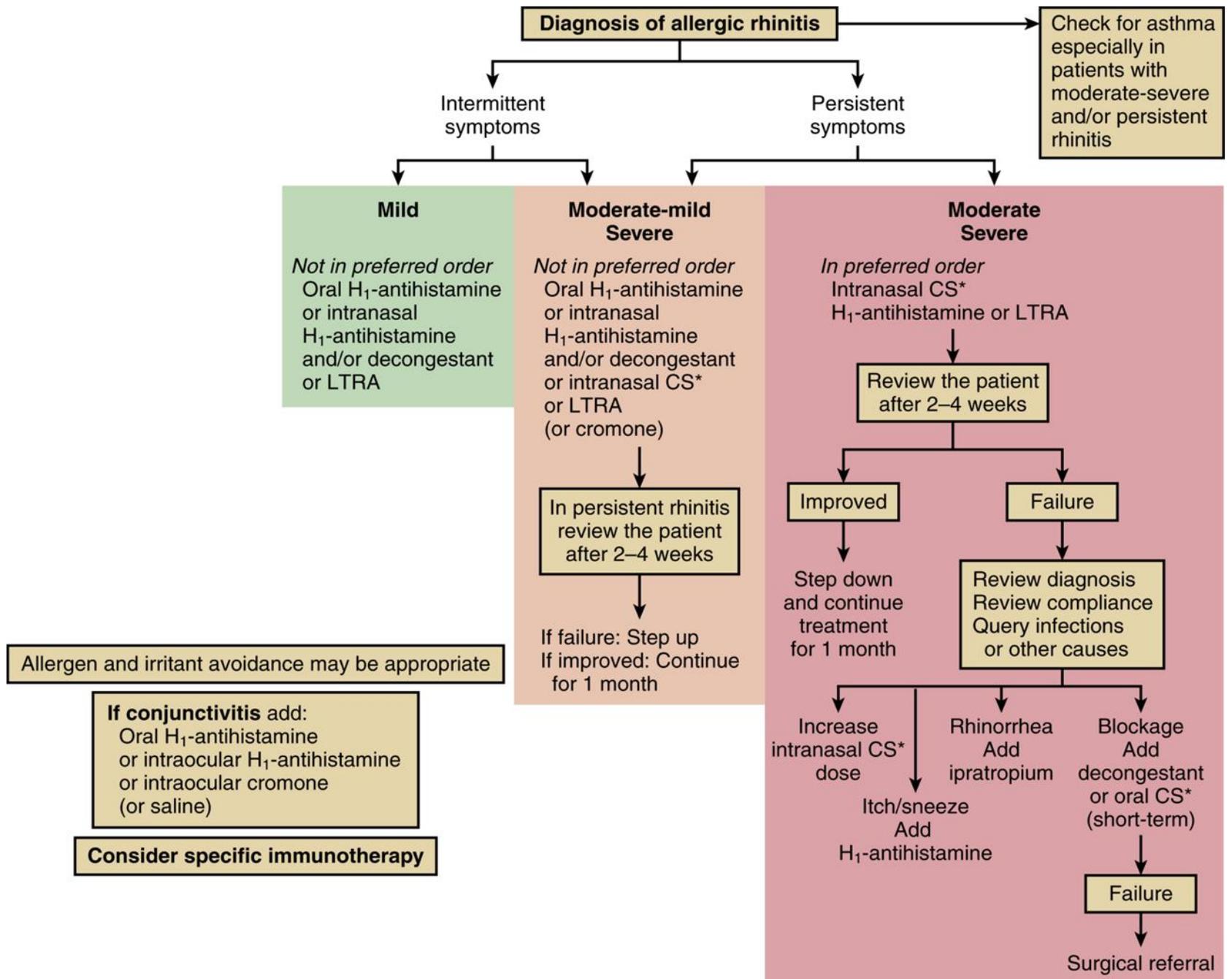
دختر خانم ۱۸ ساله بعلت آبریزش بینی، سرفه و خلط سفید رنگ و صاف کردن گلو مراجعه نموده است در معاینه ترشحات سفید در پشت حلق مشهود است. اقدام مناسب بعدی کدام است؟

الف) قرص مونته لوکاست ده میلی روزانه

ب) اسپری بینی کورتیکواستروئید

ج) اسپری بینی اکسی متازولین بمدت یکماه

د) آنتی بیوتیک بمدت دو هفته



در مورد احتمال حمله بیوتروریسم با Anthrax استنشاقی از شما مشاوره می‌گردد. شما تمام موارد زیر را ذکر می‌کنید بجز؟

- الف) شروع علائم بیماری از زمان تماس ممکن است بیش از ۴۰ روز باشد.
- ب) گرافی قفسه سینه برای تشخیص در دسترس باشد.
- ج) آنتی بیوتیک برای پیشگیری و درمان در دسترس باشد.
- د) فرد در صورت ابتلا لازم است جهت جلوگیری از انتقال فرد به فرد قرنطینه گردد.

Disease	Signs and Symptoms	Incubation Time (Range)	Person-to-Person Transmission	Isolation	Diagnosis *	Postexposure Prophylaxis	Treatment †
<b>Anthrax</b> ( <i>Bacillus anthracis</i> )							
Inhalation	Flu-like symptoms including fever and chills, shortness of breath, cough, sweats, fatigue, and myalgias. May also have confusion, headache, nausea, vomiting or stomach pain.	1–43 days (range, up to 60 days)	None	Standard	CXR with widened mediastinum; cultures of sputum and blood	Antibiotics, vaccine	Antibiotics, antitoxin
Cutaneous	Initially a group of small blisters or bumps that may itch. Swelling may develop around the sore; blisters develop into a painless skin sore (ulcer) with a necrotic (black) center; lesions most commonly on face, neck, arms, or hands.	5–7 days (range, 1–12 days)	Rarely	Contact	Cultures of blood and lesion (swab)		
Gastrointestinal	Fever and chills, lymphadenopathy (neck), pharyngitis, dysphagia, nausea and vomiting (may be bloody), diarrhea, headache, abdominal pain, and flushing and conjunctivitis.	1–6 days	None	Standard	Cultures of blood and stool		
Botulism ( <i>Clostridium botulinum</i> toxin) via inhalation	Double or blurred vision, ptosis, dysarthria, dysphagia, dysphonia, shortness of breath, dry mouth, muscle weakness; ascending flaccid paralysis. Suggested by absence of fever, symmetrical neurologic deficits, patient responsive, normal or slow heart rate with normal blood pressure, and no sensory deficits with exception of blurred vision.	12–72 hours (2 hours to 8 days)	None	Standard	Presumptive based on clinical findings. Identification of toxin in serum, stool, or vomitus. Culture of stool, wound, or food source.	None	Antitoxin, botulinum immune globulin
Pneumonic plague ( <i>Yersinia pestis</i> )	Fever, headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery mucus. Septicemic plague may develop.	1–4 days	Via respiratory droplets	Droplet	Cultures of blood (usually positive), sputum, bronchial washings	Antibiotics	Antibiotics
Smallpox (Variola)	Initial stage (2–4 days): high fever, prostration, myalgias, vomiting. Rash: starts as small red spots on tongue and in mouth, changes to sores that rupture, then rash on face that spreads to arms and legs, and then to hands and feet.	10–14 days (range, 7–19 days)	Via airborne spread	Contact, airborne (special precautions required) †	PCR of clinical specimens (i.e., skin lesions, NP swab, blood), isolation of small virus, serology **	Vaccine	Vaccine, tecovirimat

برای رفع انسداد آندو برونشیا ل تومورال بیماری که تحت اکسیژن تراپی با FIO<sub>2</sub>: 60% قرار دارد کدام روش

درمانی ذیل توصیه می شود؟

الف) Cryotherapy

ب) APC

ج) Electrocautery

د) Laser

Advantages and Disadvantages of Therapeutic Modalities

Modality	Time to Achieve Results	Advantages	Disadvantages	Comments
Electrocautery	Immediate	Inexpensive Multiple accessories	Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Keep F io <sub>2</sub> <0.4
Argon plasma coagulation	Immediate	Inexpensive Can treat at an angle to electrode	Risk for gas embolization with higher flow rates Often need to couple with mechanical débridement	Need to deactivate pacemaker/AICD Depth of penetration 2–3 mm Keep F io <sub>2</sub> <0.4
Laser photoresection	Immediate	Extensive data supporting its use	Need laser safety precautions	Depth of penetration up to 10 mm Keep F io <sub>2</sub> <0.4
Stent	Immediate	Only bronchoscopic modality for extrinsic compression	All stents have associated complications of granulation tissue formation, infection, and migration	Metallic stents should be used with caution in patients with nonmalignant disease
Microdébrider	Immediate	Can use in high-F io <sub>2</sub> environments Can provide tissue for pathology	May need additional tools to provide hemostasis	Cannot reach distal airways
Cryotherapy	48–72 hr	Normal airway is cryoresistant Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires “cleanout” bronchoscopy	Cryoadhesion can remove organic foreign bodies
Photodynamic therapy	48–72 hr	Can destroy submucosal tumor Can use in high-F io <sub>2</sub> environments	Delayed maximal effect Requires “cleanout” bronchoscopy Systemic photosensitivity Need laser safety precautions	Swelling of tumor can cause obstruction
Brachytherapy	Delayed: days to weeks	Can destroy submucosal tumor	Coordination with radiation oncology	Radiation bronchitis Risk for erosion into vessels Swelling of tumor can cause obstruction

۹۵ - آقای ۵۰ ساله با سابقه الکلیسم از چند سال قبل با شکایت درد شکم از دو روز پیش، تهوع و استفراغ مراجعه کرده است. علائم حیاتی و آزمایشات اولیه به شرح زیر است:

BP=90/60 , HR=110 , RR=28 , T =38

pH =7.32 , PCO2=32 mmHg , PO2 =88 mmHg , HCO3=16

Na=132 meq/lit , Cl =92 meq/lit , Cr=1.5 mg/dl , amylase =400 , Lipase =250

تفسیر اسید - باز بیمار کدام است؟

- الف) اسیدوز متابولیک + اسیدوز تنفسی حاد
- ب) اسیدوز متابولیک + آلکالوز متابولیک + اسیدوز تنفسی مزمن
- ج) اسیدوز متابولیک جبران شده + آلکالوز تنفسی حاد
- د) اسیدوز متابولیک جبران شده + آلکالوز متابولیک

آقای ۳۰ ساله با سرفه خشک و تنگی نفس مراجعه کرده است. در معاینه کراکلهای Fine دمی دارد. در HRCT انجام شده ندولهای با حدود نامشخص در مرکز لبول ثانویه ریوی (Secondary Pulmonary Lobule) دیده می‌شود. کدامیک از تشخیص‌های افتراقی زیر کمتر از بقیه در این بیمار مطرح است؟

الف) Pulmonary Edema

ب) Hypersensitivity Pneumonitis

ج) Silicosis

د) Sarcoidosis

# Centrilobular nodules

- predominantly located in the bronchovascular location in the center of the secondary lobule. They can be either well-defined or poorly defined.
- Well-defined centrilobular nodules can be seen in silicosis and coal workers' pneumoconiosis, 169 asbestosis, 168 and pulmonary Langerhans cell histiocytosis (PLCH).
- Poorly defined centrilobular nodules often reflect bronchiolar or peribronchiolar abnormalities 193 and can be seen in silicosis and coal workers' pneumoconiosis, 169 endobronchial spread of infection, 195 pulmonary hemorrhage ( Fig. 20.22 ), hypersensitivity pneumonitis, 197 , 198 and pulmonary edema.

۹۸- بیمار با تشدید COPD و هیپراکپنی شدید تحت تهویه مکانیکی است به علت auto PEEP بالا علیرغم اقدامات لازم بیمار هیپر اینفلیشن شدید دینامیک دارد و فشارخون بیمار 80/40 دارد. برای کاهش PCO2 تصمیم به استفاده از اکمو گرفته می شود. کدامیک از روش های زیر در این بیمار کمتر کاربرد دارد؟

- Low flow Eco2 removal
- Arteriovenous co2 removal
- V-V Eco2 removal
- Pump assist lung protection

کدامیک از سلولهای موجود در بافت دستگاه تنفسی در خنثی کردن توکسین های استنشاقی نقش بیشتری دارند؟

الف) سلولهای مژکدار

ب) گابلت - سل ها

ج) کلاب - سل ها

د) ماکروفازهای آلوئولی

مرد ۳۶ ساله مشتاق غواصی جهت آموزش غواصی با کپسول هوا مراجعه می‌کند. پس از شروع غواصی وقتی فرد به عمق ۱۲۰ پا می‌رسد به دستورات راهنما با تنبلی پاسخ می‌دهد و نهایتاً پاسخ نمی‌دهد. کدامیک از علل زیر علت بروز این علائم است؟

الف) Nitrogen narcosis

ب) Air emboli

ج) Hypothermia

د) Hyperbaric compression syndrome

- در قضاوت بالینی برای بیمار در حین اخذ شرح حال و معاینه فیزیکی تمام عبارات زیر صحیح است بجز؟
- الف) عدم پرداختن به سایر تشخیص های افتراقی پس از رسیدن به اولین تشخیص شایعترین خطا است
  - ب) استفاده از نرم افزارهای تشخیص افتراقی در کاهش خطای تشخیص کمک بیشتری نمی کند
  - ج) اگر تشخیص نهایی با همه شکایات و علائم تطبیق ندارد توجه را روی گفته بیمار مجدداً باید متمرکز کرد
  - د) بکارگیری محتمل ترین تشخیص قبل از انجام تست های آزمایشگاهی انتخاب تست را بهتر می کند

در مورد کارایی پودرهای خشک استنشاقی در درمان بیماری های ریوی تمام عبارات زیر صحیح است بجز؟

الف) تجویز سه دارو همزمان اثر کمتری از مصرف تک تک داروها دارد

ب) شکل گیری ذرات وابسته به قدرت دم فرد است

ج) در کسی که اختلال شناختی شدید دارد نباید استفاده کرد

د) در هنگام ساخت و بکارگیری به هیچ وجه نباید رطوبت داخل دارو شود