Tanta University
Faculty of Medicine

Department of physiology
Time allowed: Three hours
Total marks: 100

Physiology
MD Chest

Date: 2 /6/ 2021

All questions must be answered:

1- Discuss: Physiological bases determining work of breathing . (25 marks)

2- Mention: Factors regulating gas exchange in lung and tissues. (25 marks)

3- Compare between : Apical and basal part of the lung on pulmonary function. (25 marks)

4- State : physiological significance of dead space . (15 marks)

5- State: Indications and complications of oxygen therapy. (10 marks)

Examination for MD degree in: Chest
course title: TMED04-04 Path
Date: 2/6/2021
Term: April 2021
Time Allowed: 1.5 hour
Total Assessment Marks: 40

Tanta University
Faculty of Medicine
Department of: pathology

Questions Number	Marks
Q1- Comment about necrosis and its types.	10
Q2- Short notes on : types of carcinoma.	5
Q3- Comment about pleural effusion.	10
Q4- What about Bronchogenic carcinoma.	15

Tanta University	**MD old by law exam 2005**
Faculty of Medicine	**Time allowed: 3 hours**
Chest Department	**Total : 50 marks**
(Paper I)	**17 May 2021**

All Questions to be answered

1. Discuss systemic assessment and role of biological treatment of severe asthma in adults? (7)
2. Discuss diagnostic algorithm for interstitial lung diseases ? (7)
3. Discuss management of tuberculosis in patients with comorbidities? (7)
4. Discuss cardio-metabolic consequences of sleep disordered breathing and hypoventilation? (6)
5. Discuss preventing ventilator associated pneumonia? (6)
6. Discuss management of malignant pleural effusion? (5)
7. Write short notes on
    a. Imaging of pulmonary hypertension? (4)
    b. Body plethysmography? (4)
    c. Smoking cessation and risk reduction? (4)

لجنة الأمتحان

ا.د على عبد اللاه ا.د هدى بحر ا.د غادة عاطف

Good luck

Tanta University	**Faculty of Medicine**	**Chest Department**	
M.D. Exam	**Commentary**	**2005 لائحة**	**31/5/2021**
Time Allowed: 1.5 Hours			**Marks (100)**

A 17-yr old boy presented with productive cough and progressive shortness of breath. His medical history started four months earlier with successful surgical repair of a longitudinal airway rupture extending from the carina into the left main bronchus following a blunt chest trauma. A follow-up bronchoscopy after one month revealed a narrowing of the left main bronchus by endoluminal granulation tissue formation around the intraluminal nylon stitches. Nd/YAG thermal laser vaporization with the rigid bronchoscope was attempted twice in three weeks. Although initially successful, the symptoms worsened.

CXR on hospital admission suggested complete atelectasis of the left lung. On endoscopy, purulent secretions were seen while excessive granulation tissue at the site of bronchial repair narrowed the lumen by >50%. Stent placement was performed after application of a third Nd/YAG laser treatment. Airway patency was reached. On the distal part of the stent granulation tissue was still present. His shortness of breath did not subside and 3 days after hospital admission, he had a nonproductive cough and was more dyspnoeic. He was eating and had vomited once. His temperature was 37.3°C, pulse rate was 110 beats.min^{-1}, respiratory rate was 20 breaths.min^{-1}, and blood pressure was 140/80 mmHg. Auscultation of his lungs revealed diffuse in- and expiratory rhonchi (left>right). Examination of the heart, abdomen, skin and CNS showed no marked abnormalities. TLC was 13.7X10^{9} L. Biochemical tests were normal. CXR showed complete atelectasis of the left lung, significant amount of gastric air & dilated air-filled oesophagus.

Due to progressive respiratory distress, he was mechanically ventilated. ABG with FIO_2 of 0.4 showed: pH: 7.34; PaO_2: 9.1 kPa; $PaCO_2$: 6.2 kPa; bicarbonate: 24.8 mmol.L^{-1}. In the following hours gas exchange worsened. On auscultation air sounds were heard in the epigastrium. Gastric air could not be effectively expelled by nasogastric tube suction.

- **Discuss the case**
- **Suggest the diagnostic and therapeutic modalities**

Good luck

Tanta University	**MD old bylaw exam2005**
Faculty of Medicine	**Time allowed: 3 hours**
Chest Department	**Total : 50 marks**
(Paper II)	**29May 2021**

All Questions to be answered

1. Discuss Biomarkers in COPD exacerbation (7)
2. Discuss cardiopulmonary exercise testing (6)
3. Discuss anticoagulants in acute and chronic pulmonary embolism (6)
4. Discuss the role of endo-sonography for diagnosis and staging of lung cancer (5)
5. Discuss the role of bronchoscopy in pulmonary emergencies (5)
6. Write short notes on
    a. Covid-19 vaccines (3)
    b. Eaton-Lambert Syndrome (3)
7. MCQs 30 questions to be answered (15)

تسلم ورق اسئلة هذا السؤال مع ورق الأجابة

لجنة الأمتحان

اد على عبد اللاه اد هدى بحر اد غادةعاطف

Good luck

1 **A 64 year old man has become unwell over the past couple of days, he feels very tired, feverish and has a productive cough of green sputum. He ignored this for a couple of days as he often has a smokers cough. He has a 100 pack year history and has continued to smoke despite recent increased shortness of breath on exercise. He has seen his GP recently and he has referred him to hospital for further investigations. His wife became very concerned about him and has brought him for consultation. What is the most appropriate first line investigation for this gentleman?**

A. Sputum culture
B. Chest X-ray
C. Spirometry
D. Peak flow
E. C-reactive protein

2 **After a course of antibiotics and steroids, the patient improves. However, his cough remains and he continues to be short of breath on exercise. He is continuing to smoke. What is the most important follow up investigation?**

a. Spirometry
b. Blood culture
c. Chest X-ray
d. Arterial blood gases
e. No investigations needed

3. **A 44 year old female, she had problems with her breathing for the last month or so. She previously smoked 30 a day for 'quite a few years', and has not had any exposure to any industrial chemicals or asbestos. She has never had any problems with her breathing in the past. In terms of past medical history, she has previously had severe joint pains, worse in her hands. However she has been on treatment for the last 6 months and this is now much improved. Her spirometry results are as follows: FEV1: 2.0 (Normal for age and height 2.79) FVC: 2.8 (Normal for age and height 3.25) What is the most likely pathology causing these results, taking into account the clinical history?**

a. Tuberculosis
b. Pulmonary fibrosis
c. COPD
d. Asthma
e. Bronchiactasis

4. **A 55 year old male works as a teacher, presents to his GP. He has progressive shortness of breath on exercise, a dry cough and has lost some weight recently. He's not sure how much weight he has lost, but he has had to tighten his belt on his trousers. He is a previous smoker of 10/day for 29 years. On examination the ends of his fingers appear rounded and there are inspiratory crackles on auscultation. PEFR was normal. Despite a 5 day course of doxycyclin, Tony feels no better. A chest X ray is organised, which shows no obvious mass, however there appears to be some haziness at both lung bases. What is the most likely cause of the above presentation?**
    a. COPD
    b. Lung cancer
    c. Idiopathic pulmonary fibrosis
    d. Coal workers pneumoconiosis
    e. Tuberculosis

5. **A 64yr old gentleman visited his GP with SOB and a productive cough. He has attended the practice multiple times in the last few years for similar problems, particularly in winter. He explains he normally coughs a lot, bringing up a small amount of white sputum but currently is much more SOB and producing large volumes of green sputum. He is an ex-smoker with a 20 pack year history. His GP treats him with a course of antibiotics for a chest infection, which is very effective. She also refers him for pulmonary functions tests (PFTs). The results of his PFTs post bronchodilation are as follows: FVC: 3.58 (predicted value 3.76 litres) 95% FEV1: 1.9 (predicted value 2.94 litres) 65% FEV1/FVC ratio: 0.53. What is this pattern consistent with?**
    a. Normal lung function
    b. Restrictive disease
    c. Obstructive disease
    d. Mixed disease
    e. Severe COPD with limited response to bronchodilators

6. **A 68yr old man is seen in his annual review at the respiratory clinic, he has COPD, currently controlled with inhalers. His pulmonary lung function test (PFT) results are as follows: FVC: 3.40 (predicted value 4.23 litres) 80%, FEV1: 1.54 (predicted value 3.25 litres) 47%, FEV1/FVC ratio: 0.45. What severity of COPD does this patient have based on the PFT findings?**
    a. The finding are not consistent with the diagnosis of COPD
    b. Mild COPD
    c. Moderate COPD
    d. Severe COPD
    e. Very severe COPD

7. **A 70yr old lady who presents to the GP with a 6 month history of progressive SOB and dry cough. She is an ex-smoker, and has a PMH of hypertension and rheumatoid arthritis, for which she has been on methotrexate for a number of years. On examination she has fine inspiratory crackles and clubbing. CXR shows no acute consolidation or masses, but does show widespread increase in interstitial lung markings which appears to be longstanding. To further investigate her symptoms the GP requests a CT scan of the thorax and pulmonary function tests (PFTs). The results of the PFTs are as follows: FVC: 1.6 (predicted value 2.4) 67%, FEV1: 1.3 (predicted value 2.0) 65%, FEV1/FVC: 0.81. What are the above PFTs consistent with?**
   a. Normal lung function
   b. Restrictive disease
   c. Obstructive disease
   d. Mixed disease
   e. Idiopathic pulmonary fibrosis

8. **A 54 year old male patient has a history of cough productive of green sputum with shortness of breath and left pleuritic chest pain. His temperature is 38.4 C, respiratory rate 22 bpm, pulse 110bpm, WBC 12.4 x 109 /L and his CXR shows consolidation at the left base. What is the most likely causative organism for this presentation?**
   a. Haemophilus influenza
   b. Klebsiella pneumonia
   c. Mycoplasma pneumonia
   d. Staphylococcus aureus
   e. Streptococcus pneumonia

9. **A 43 year old with a history of intravenous drug use has presented with a one week history of progressively worsening dyspnoea and a dry cough. On examination, he is cachectic, and he explains that he has been unintentionally losing weight for the past 6 months or so. He states he takes medicine to 'help his AIDS', but hasn't taken any in a while. Blood tests show WCC 8.2 x 109 /L and on chest X ray there is patchy shadowing in both lung fields. What is the most likely causative organism for this presentation?**
   a. Legionella pneumophila
   b. Mycoplasma pneumonia
   c. Pneumocystis jiroveci
   d. Staphylococcus aureus
   e. Streptococcus pneumonia

10. **A 30 year old hepatitis C positive IV drug user presents with a three week history of fever, sweats and some shortness of breath. His temperature is 37.6 °C, respiratory rate 30 bpm, pulse 110bpm, WCC 14 x 109/L. He has an erythematous and painful rash on his inner thigh, which is the likely origin of his sepsis. What is the most likely causative organism associated with this?**
    a. Haemophilus influenza
    b. Klebsiella pneumonia
    c. Mycoplasma pneumonia
    d. Staphylococcus aureus
    e. Streptococcus pneumonia

11. **A 27 year old lady presents with a three day history of shortness of breath and malaise. She is experiencing haemoptysis and fever. Her bloods show WCC 15.0 and CRP is 125. She is otherwise fit and well. She and her partner recently moved home to a building where she states the water piping 'wasn't quite ready yet'. What is the most likely causative organism of this presentation?**
    a. Chlamydia pneumonia
    b. Haemophilus influenza
    c. Klebsiella pneumonia
    d. Legionella pneumophila
    e. Mycoplasma pneumonia

12. **A 54 year old gentleman presents to infectious diseases clinic for follow up of his tuberculosis treatment. He is concerned because he has found it difficult to see objects in the distance, in addition to worries that he has become colour blind. Which of his medications is most likely to be causing this defect?**
    a. Ethambutol
    b. Isoniazid
    c. Prednisolone
    d. Pyraziniamide
    e. Rifampicin

13. **A 68 year old woman is brought into hospital after becoming severely out of breath at home. Observations on arrival include a respiratory rate of 28 breathes/minute, blood pressure 85/53mmHg, heart rate 103 beats/ minute and oxygen saturation of 87% on air. Blood urea is 6mmol/L and AMTS is 7/10 with no previous confusion. What is the CURB65 score for this patient?**
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5

14. **You have been asked to review a 15 year-old girl who has undergone haematopoeitic stem cell transplantation for treatment of leukaemia. She is currently on day 13 post-transplant and is leukopenic, with a white cell count of 0.4 (normal: 4-11). You reviewed her temperature which was high this morning, at 38.5 Celsius. All other observations are within normal limit. As part of your trust's neutropenic sepsis guidelines, you arrange several investigations including a chest X-ray and commence broad-spectrum IV antibiotics. The chest X-ray report states that she has "widespread pulmonary infiltrates across the lung fields with ground-glass consolidation". By the time the film has been reported, she has complained of being short of breath and has had oxygen commenced. Which investigation would confirm the organism suspected of causing these symptoms in this patient?**
    a. Sputum sample cultured for acid-fast bacilli
    b. IgM for cytomegalovirus (CMV)
    c. Bronchoalveolar lavage and culture
    d. IgM for Epstein-Barr virus (EBV)
    e. Blood cultures

15. **A 64 year old man has presented with, breathlessness, a non-productive cough for one year, with weight loss in the past 6 months. He also has low mood and bone pain. On bone profile his corrected calcium is 2.68 (normal 2.25-2.5 mmol/L). On Chest X Ray he has a cavitating lesion in his left lung and on CT scan the tumour is identified as being located on the proximal bronchus. Which of the following types of lung cancer is this lesion most likely to be caused by?**
    a. Squamous Cell Carcinoma
    b. Large Cell Carcinoma
    c. Small Cell Lung Cancer
    d. Adenocarcinoma
    e. Carcinoid tumour

16. **A 69 year old lady with a 40 pack year history of smoking has presented to clinic with truncal obesity, fatigue and hirsutism. 24-hour urinary free cortisol test shows levels four times the normal laboratory value on three occasions. On chest X ray, a lesion is identified in the proximal bronchus of the right lung. Which of the following types of lung malignancy is most likely to be present?**
    a. Squamous cell carcinoma
    b. Large cell carcinoma
    c. Small cell lung cancer
    d. Adenocarcinoma
    e. Carcinoid tumour

17. Adult respiratory distress syndrome is observed in the followings except:

a. Falciparum malaria
b. Snake bite
c. Status asthmaticus
d. Toxic shock syndrome

18. Which of the following statements about pulmonary embolism is false?

a. It is associated with prolonged bed rest
b. Most emboli arise from clots in the right ventricle
c. It has a known association with femoral fracture
d. It may cause sudden death

19. The oxygen content of the arterial blood is reduced in all of the following except:

a. Methaemoglobinaemia
b. Carbon monoxide poisoning
c. By the presence of a left to right shunt in the heart
d. Fallot's tetralogy
e. Fibrosing alveolitis with low arterial PaCO2

20. Hyperbaric oxygenation is useful in all except:

a. Congenital heart diseases
b. Gas gangrene
c. Carbon monoxide poisoning
d. Nitrogen toxicity

21. A 68 years old man presented with massive pulmonary embolism. He has been hypotensive for the last 12 hours and oligouric despite Dopamine infusion on diuretic doses and furosemide 80 mg IV, Recent hemodynamics are: SBP 69 mm Hg, MBP 52 mm Hg (N= 70-105 mm Hg), CI 1.9 l/min/m2 (N= 2.5-4 l/min/m2), CVP 28 mm Hg, PAWP = 4 mm Hg (N=6-12 mm Hg) What is your diagnosis?

a. Cardiogenic shock due to left ventricular failure.
b. Cardiogenic shock due to right ventricular failure.
c. Septicemic shock.
d. Hypovolemic shock.

22. A 75 Kg 44 years old man who was intubated and mechanically ventilated for severe asthma. He is on SIMV volume control, with the following settings: Vt: 900 ml, RR 16 b/min., Peak flow: 30 L/min, PEEP: 5 cm H2O but he is not improved. What should be modified in the ventilator setting parameters:

a. Reduce the respiratory rate.
b. Increase the peak flow.
c. Increase the peak flow and reduce the respiratory rate.
d. Increase the PEEP.

23. A 55 years old woman with pneumonia. She is intubated and mechanically ventilated with pressure control. The pressure limit is set at 35 cm H2O. She was sweaty and fighting the ventilator with high peak pressure alarm. Her observation showed the following: HR: 149 beat/min., Systolic B.P.: 80 mm Hg., RR 33 breath/min, Peak airway pressure 45 cm H2O, Exhaled VT: 300 ml and PaO2: 54 mm Hg on 60 FiO2. What shoul you done for her?

a. Remove the patient from the ventilator and use an ambu bag.
b. Raise the set alarm level of the peak pressure.
c. Increase the set tidal volume.
d. Give another sedative dose.

24. A girl 17 years old is admitted to ICU. She is mechanically ventilated following overdose of benzodiazepine with the following ABG: pH= 7.6, PaCO2 = 20 mm Hg, PaO2 = 90 mm Hg, HCO3 = 22 mmol/L and Base excess = 1. What is your interpretation of her acid base status?

a. Partially compensated respiratory alkalosis.
b. Uncompensated respiratory alkalosis.
c. Partially compensated metabolic alkalosis.
d. Uncompensated metabolic alkalosis.

25. Weaning patients from maximum ventilator support usually involves :-

a. Weaning PEEP first, tidal volume second and the fraction of inspired oxygen (FIO2) third.
b. Weaning FIO2 first, ventilator rate second and PEEP third.
c. Weaning FIO2 first, PEEP second and tidal volume third.
d. Weaning FIO2 first, PEEP second and ventilator rate third.

26. PEEP (positive end expiratory pressure) known to result in the following except:

a. Increased cardiac output
b. Opening of collapsed airways and reduction in intra-pulmonary shunt
c. Pneumomediastinum
d. Tension Pneumothorax

27. Hypoxemia while receiving 100% O2 indicates:

a. Impaired diffusion
b. Hypoventilation
c. Ventilation/perfusion ratio inequality
d. Right to left shunt

28. Which one of the following statements about BCG vaccination is correct ?

a. BCG vaccination is recommended for all children between age 10 and 14 years
b. BCG vaccination should be offered to healthcare workers who have a positive Mantoux test
c. BCG vaccination should be offered to people who have lived with someone with active respiratory tuberculosis who have a negative Mantoux test
d. Patients with HIV infection should receive a BCG vaccination

29. Contraindications of permissive hypercapnia include the following except:

a. Acute head injury.
b. Acute myocardial infarction.
c. Acute metabolic acidemia.
d. Severe Pneumonia.
e. Sickle cell disease.

30. A 74 years old man admitted to ICU. He has been hypotensive for the last 12 hours. Recent hemodynamics were SBP = 75 mm Hg, MBP = 42 mm Hg, CI 1.55 l/min/m2, SVRI 2780 DS/m2/m3, CVP= 2 mm Hg, PAWP = 4 mm HG. What is your diagnosis?

a. Cardiogenic shock due to left ventricular failure.
b. Cardiogenic shock due to right ventricular failure.
c. Septicemic shock.
d. Hypovolemic shock

Good Luck