

Unit 3

THE CARDIOVASCULAR SYSTEM

A. Warm-up

From the very first heartbeat, to the last heartbeat, it is the heart that marks the beginning and the end of our human existence. The heart pumps the blood that reaches every cell in the human body, carrying vitally important elements.

Working in pairs or threes try to answer the questions given below.

1. What makes the circulatory system of great importance? What are its functions?
2. What two major systems does the circulatory system comprise?
3. What structural elements does the cardiovascular system consist of?
4. What structural elements is the lymphatic system composed of?
5. What other systems does the cardiovascular system cooperate with and how?

Compare and discuss your answers to sum up the information gathered.

B. Reading and Vocabulary Building

Study the circulatory system anatomy related vocabulary given on the margin.

Task 1

Complete the text with the vocabulary given below.

PART ONE

connecting • concerned (2) • consists • carry (2) • includes • composed

The **circulatory system** is an organ system which is often considered as of the **cardiovascular system** with the distribution of blood and the **lymphatic system** with the distribution of lymph.

The **cardiovascular system** of the heart and the blood vessels. The latter arteries, veins and capillaries. With the exception of the pulmonary artery, all arteries oxygenated blood rich in nutrients. All veins, with the exception of pulmonary veins, deoxygenated blood rich in waste products. Capillaries are minute blood vessels the ends of the smallest arteries (arterioles) with the beginnings of the smallest veins (venules).

PART TWO

regulated • composed • situated • valve (3) • prevent • divides • middle • innermost • outmost • pumps • receives • consisting

The heart is a four-chamber organ in the middle mediastinum. An oblique, longitudinal septum the heart into two parts, each of an atrium which blood from veins and a ventricle which blood into arteries. The wall of the heart is of three layers of

Vocabulary

cardiovascular
sercowonaczyniowy
circulatory krążeniowy
deoxygenated odlenowany
vessel naczynie
vein żyła
mediastinum śródpiersie
serous surowiczy
valve zastawka
tricuspid trójdzielny
thymus grasicca
diastole rozkurcz serca
systole skurcz serca

tissue: the one, the pericardium, being a serous membrane, the one, the myocardium or the heart muscle, and the, the endocardium, also a serous membrane. The passage of blood through the heart is by the presence of valves: the tricuspid between the right atrium and the right ventricle, the semilunar between the right atrium and the pulmonary arteries, the mitral or bicuspid between the left atrium and the left ventricle. The valves also blood from flowing backwards.

PART THREE

transports • collects • takes (2) • carries • passes (2) • veins • artery • rich • supplying • emptying • arise • circulation • returns • supplies • left • drained • collected

Three types of blood are distinguished: systemic circulation, pulmonary circulation and portal circulation. The *systemic circulation* oxygenated blood away from the ventricle to the aorta, its branches and ramifications to the capillaries where it to the venules, the veins and the superior and inferior venae cavae to be into the right atrium. It has a branch – the *coronary circulation* – which the heart wall. The coronary arteries from the aorta. After the heart wall the blood is into the coronary vein which drains into the right atrium. *Pulmonary circulation* deoxygenated blood through the pulmonary to the lungs where the exchange of carbon dioxide for oxygen place and purified blood through pulmonary to the left atrium. The *portal circulation* is concerned with deoxygenated blood in nutrients from the abdominal organs. The portal vein the venous blood returning from the stomach, intestines, spleen and pancreas and it to the liver where it through hepatic capillaries into veins which finally form three hepatic veins into the inferior vena cava.

PART FOUR

collect • passes • produced • consists • filtered • extends • return • involved

The **lymphatic system** of lymph, lymph nodes and lymph vessels. It throughout the body. The lymph vessels lymph from the body tissues and it to the bloodstream. Lymph through the lymph nodes where it is by white blood cells (lymphocytes) in the bone marrow, spleen and thymus and in the immune response of the body.

Task 2

Now, answer the following questions referring to all four parts of the text above:

1. What two systems does the circulatory system embrace?
2. What are the components of the circulatory system? What functions do they perform?
3. How is the heart built?
4. What is the role of valves in the heart? How many of them are there?
5. What are the three types of circulation distinguished?
6. What is the role of each of them?
7. What is coronary circulation concerned with?
8. Do all arteries carry oxygenated blood and all veins deoxygenated blood?
9. What are the components and function of the lymphatic system?
10. What is the relation between the lymphatic system and the circulatory system?
11. What other organs does the lymphatic system cooperate with?

11. 'I was trying to open my bowels this morning and suddenly became very dizzy and nauseous.'
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Task 11

Choose the right medical term to describe the patient's condition and then report the patient's condition.

orthopnoea • dyspnoea • syncope • perspiration • pre-syncope • anxiety • ankle oedema • severe dyspnoea • epistaxis • cardiac arrhythmia

1. 'I can't catch my breath.' *dyspnoea*

The patient complains of *dyspnoea*.

2. 'I am all sweaty.'
-

3. 'I'm all nerves and worried for no good reason.'
-

4. 'I often have a feeling that the world is spinning around me but it lasts just a moment.'
-

5. 'I can't catch my breath at night unless I sleep on a few pillows.'
-

6. 'I feel terribly short of breath.'
-

7. 'My ankles are swollen.'
-

8. 'I sort of fainted yesterday but I didn't give it a thought as it was very hot.'
-

9. 'Blood is dripping from my right nostril and I can't stop it.'
-

10. 'I've got this strange sensation as if my heart has skipped a beat.'
-

Task 12

Choose the right medical term to describe the patient's condition and then report on the patient's condition.

retrosternal pain • pre-syncope • vertigo • nausea • cyanosis • vomiting • dyspnoea • fatigue • palpitations • dyspnoea on exertion

1. 'For the past two hours this chest pain has been getting worse.'
thoracic pain

There is a **history** of worsening thoracic pain of two hours' duration.

2. 'I've had more and more difficulties with catching my breath for a few days now.'
-

3. 'Sometimes my fingernails get sort of cold and bluish.'
-

4. 'I've been sick for the past few hours but I haven't thrown up.'
-

5. 'I've often felt sort of dizzy over the past few weeks.'
-

6. 'I've felt increasingly tired and weak over the past few days.'
-

7. 'I've felt this sort of discomfort or pain behind my breast bone for the past few hours.'

8. 'I tend to feel sort of weak all of a sudden and seem to lose contact with what's going on.'

9. 'I started to experience an impending feeling as if my heart was racing.'

10. 'I feel even more short of breath after climbing stairs.'

Task 13

Look at the example in 1. First, ask the right question and then report the elicited information.

1. *Can you show me where you feel the pain?*

'It's right here, as if under the breast bone and also in my left arm.'

The patient complains of substernal pain radiating to the left arm.
or

The patient reports ... / There is ...

2. 'It came all of a sudden. I was just walking in the garden. It was perhaps an hour ago.'

3. 'It's sort of burning and crushing. I've never had a pain so bad in my chest.'

4. 'No, I didn't. I was conscious of what was going on. I just collapsed.'

5. 'I woke up an hour ago. The pain in the chest must have woken me. I couldn't breathe and my heart was beating like mad.'

6. 'I felt that something bad was about to happen but the pain hit me without any warning.'

7. 'No. My heart has never given me any problems, not even when I was working hard.'

8. 'Yes. I just feel sort of strange, weak, almost dizzy. In fact it has happened more frequently recently. I just sit down for a few minutes and try to breathe in deeply.'

9. 'I'm struggling to catch my breath when I lie down in bed at night.'

10. 'Yes. I take my BP regularly at home and it is always higher than normal.'

AC: Good morning. My name's John. Where's our patient?

FM: Follow me, please. She's here in kitchen. I couldn't
her from the

AC: Did she suddenly?

FM: Not really. She of feeling her heart
flutter like a bird all the and of having
a But then she always complains so I didn't
take it seriously.

AC: So you called the emergency only after she collapsed.

FM: No, no! It was when I saw her become and sort
of She must have when I was on the
phone to you.

AC: Why didn't you tell her to sit and relax? You could have
called her GP.

FM: She wouldn't listen. She never does. Besides she was extremely
.....

Task 18

Recap the information to notify the A&E Department of the
patient who is about to arrive.

Task 19

Complete the dialogue between the caller (C) and the dispatcher
(D) with the words or phrases from the list.

with you • getting • how old • breathing • describe • feel

C: My name's Gordon Brown. I'm calling from 46 South Road.
My heart's giving me problems and I'm alone at home.

D: Can you to me how you

C: I can feel the heartbeat, beat somewhat harder and more
irregularly. And there's this pressure on my chest.

D: What about

C: I feel as I needed more air then I can draw in. I feel sort of
weak and at times the room seems to be spinning.

D: are you, Mr. Brown?

C: 64.

D: We'll be in ten minutes. I understand we'll have no
problems with into the house.

Task 20

Mark the statements true (T) or false (F). Correct the false
statements.

1. The call is from the patient himself.
2. The patient is calling from 36, North Road.
3. The patient has palpitations.
4. The patient has no chest related complaints.
5. The patient's respiration is impaired.
6. The patient is under 60 years of age.

Task 21

Recap the information to the ambulance crew to be sent to the site
of the accident.

Task 22

Complete the dialogue between the caller (C) and the dispatcher
(D).

C: Emergency? My name's Cassidy. I'm in Green Lane with
a woman who seems to be having a cardiac problem.

D: the symptoms?

C: She's short of breath, very pale and sort of limp. She seemed
about to faint so I helped her to a bench. She can't sit straight
on her own.

D: is she?

C: 45-50 I'd say.

D: her how she feels?

C: Actually I did but I got no response. She is just moaning and fighting for air.

D: Anybody to you? Are you familiar with

C: No. Not at all. And there's nobody in sight. Can you send an ambulance, please? She seems to be losing it.

D: The ambulance is on They will be in about 8 minutes.

Task 23

Mark the statements true (T) or false (F). Correct the false ones.

1. The victim is a man.
2. The victim is on a bus.
3. The victim is tachypnoeic.
4. The victim was about to faint.
5. The caller cannot communicate with the victim.
6. Catching air seems to be the victim's major problem.
7. The caller has begun to give first aid to the victim.
8. The ambulance will reach the site of the accident within 5 minutes.

Recap the information to the ambulance crew to be sent to the site of the accident.

G. Follow-up

Task 24

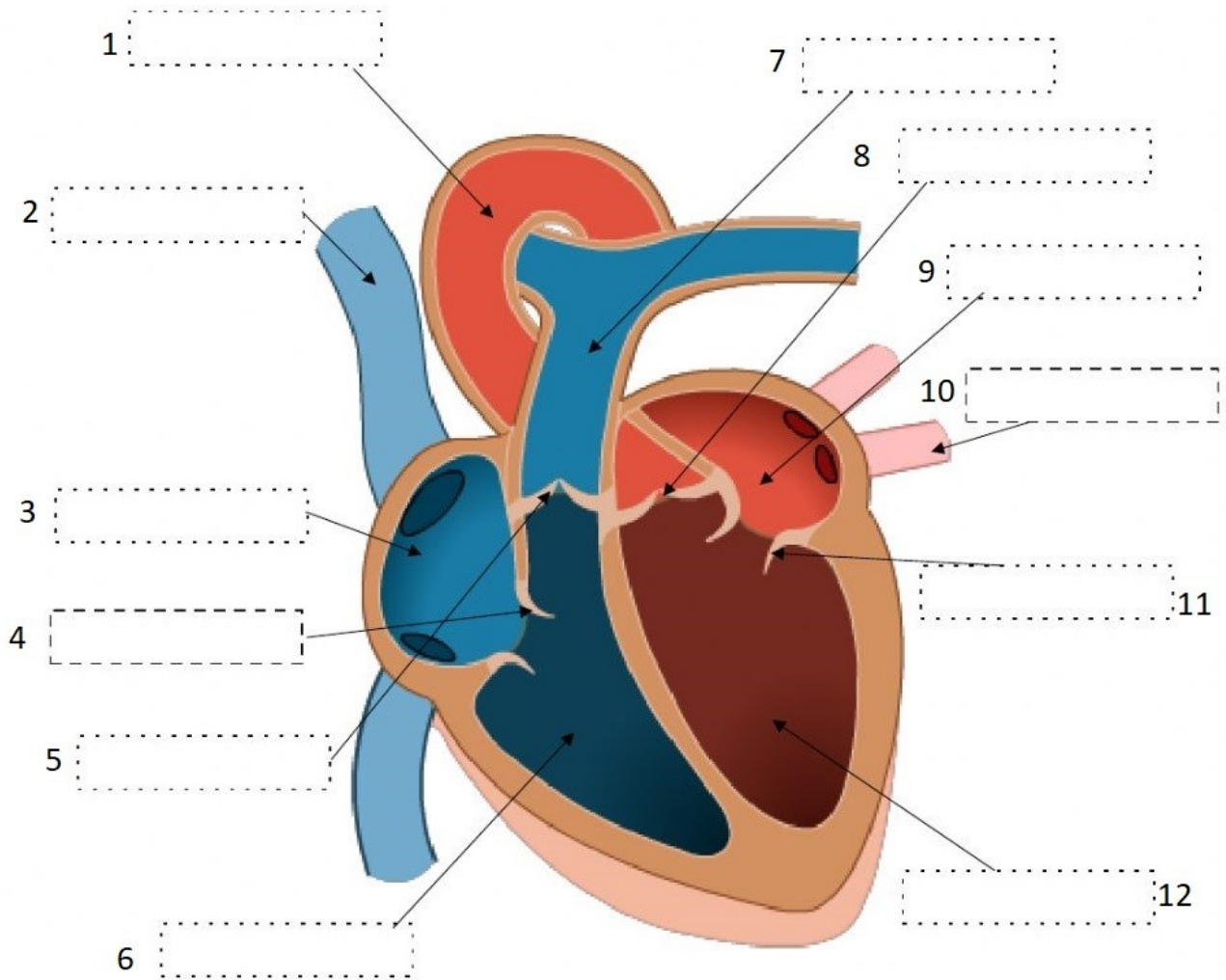
Prepare a mini-presentation on the disorders and emergencies involving the cardiovascular system. Say what information the dispatcher and the ambulance crew should collect from the victim or witnesses, what they should give particular attention to.

Task 25

Prepare a list of questions that the patient or the patient's relative or the caller/witness should be asked.

Task 26

Simulate similar situations involving receiving information about an emergency and passing it on to the ambulance crew.



right atrium

right ventricle

pulmonary valve

aorta

left atrium

superior vena cava

left ventricle

pulmonary artery

tricuspid valve

pulmonary vein

mitral valve

aortic valve