



PBL Case 1

...he suddenly collapsed



New Terms



Collapse: to fall down and become unconscious because of an illness or injury.

Dizzy: Feeling unsteady. A sense of rotation or surrounding is moving.

Vomit: eject matter from the stomach through the mouth.

History: Information gained by asking the patient specific questions that can help in diagnosis.

Intravenous fluid (IV): The infusion of a liquid substance directly into a vein.

Vagus nerve: Each of the tenth pair of cranial nerves, supplying the heart, lung, upper digestive tract, and other organs of the chest and abdomen.

Vasovagal syncope: Is the most common causes of fainting. Occurs when your body overreacts to certain trigger.

Key points



Trigger1:

- × 1- Reda feels stressed about his 2nd week of the course.
- × 2- He participates in a state race.
- × 3- Worried about being away from his family.
- × 4- It's very hot, so Reda is sweating a lot during the race.
- × 5- He collapses 50 min into the race.

Progress1:

- × 1- Reda is a healthy boy.
- × 2- It's his first time to take part in a race.
- × 3- The night before the race, he felt a little unwell. The morning of the race he had no appetite for food.
- × 4- He misses his mother and friends.
- × 4- 50 minutes into the race he feels dizzy and vomits twice, but he forces himself to continue.

Key points



Progress2:

- ✗ *Reda is dehydrated.*
- ✗ *He was given 5% dextrose and %0.9 sodium chloride by I.V. (intravenous, into the vein) while he was in the ambulance.*
- ✗ *The doctor says Reda should drink more water to stay hydrated*
- ✗ *The doctor says that the following factors may have caused him to faint (a temporary decrease in blood flow to the brain)*
 - 1) *Exercising in a hot and humid environment*
 - 2) *Loss of fluids because of excessive sweating,*
 - 3) *No prior experience of exercising*
 - 4) *Emotional stress*

The emotional stress and vomiting might have contributed to the “vagus never” (it is a mixed never 10th cranial nerve out of 12) stimulation resulting in a temporary decrease in heart rate “vasovagal syncope.”

Progress:

- ✗ *The doctor can tell that Reda can't cope/handle his stress.*
- ✗ *Reda seeks the university counseling service for help.*
- ✗ *The psychologist gives him strategies to help him cope.*

Key points



Case closure:

- ✗ *1-After two months Reda was able to cope with his stress because he applied the strategies.*
- ✗ *2-He could face his fears.*
- ✗ *3-He is able to be proactive (look for solutions rather than worries).*
- ✗ *4-He could explore options and solutions.*
- ✗ *5-He is becoming more confident.*
- ✗ *6-He could ask his teachers, peers and anyone that can help him.*
- ✗ *7-He is keeping in touch with the psychologist every fortnight.*
- ✗ *8- He is able to overcome his fears after achieving the major progress.*

Notes



Vasovagal syncope:

- ✗ *Occurs when your body overreacts to certain triggers, such as the sight of blood or extreme emotional distress. The vasovagal syncope trigger causes a sudden drop in your heart rate and blood pressure. That leads to reduced blood flow to your brain, which results in a brief loss of consciousness.*

Dehydration:

- ✗ *It occurs when you use or lose more fluid than you take in, and your body doesn't have enough water and other fluids to carry out its normal functions. If you don't replace lost fluids, you will get dehydrated.*

Vagus Nerve:

- ✗ *It is called X cranial nerve or 10th cranial nerve, longest and most complex of the cranial nerves. The vagus nerve runs from the brain through the face and thorax to the abdomen. It is a mixed nerve that contains parasympathetic fibers.*

Important Notes



CASE 1

Body Fluids



*The body loses water,
Na and K via
sweating*

Dehydration

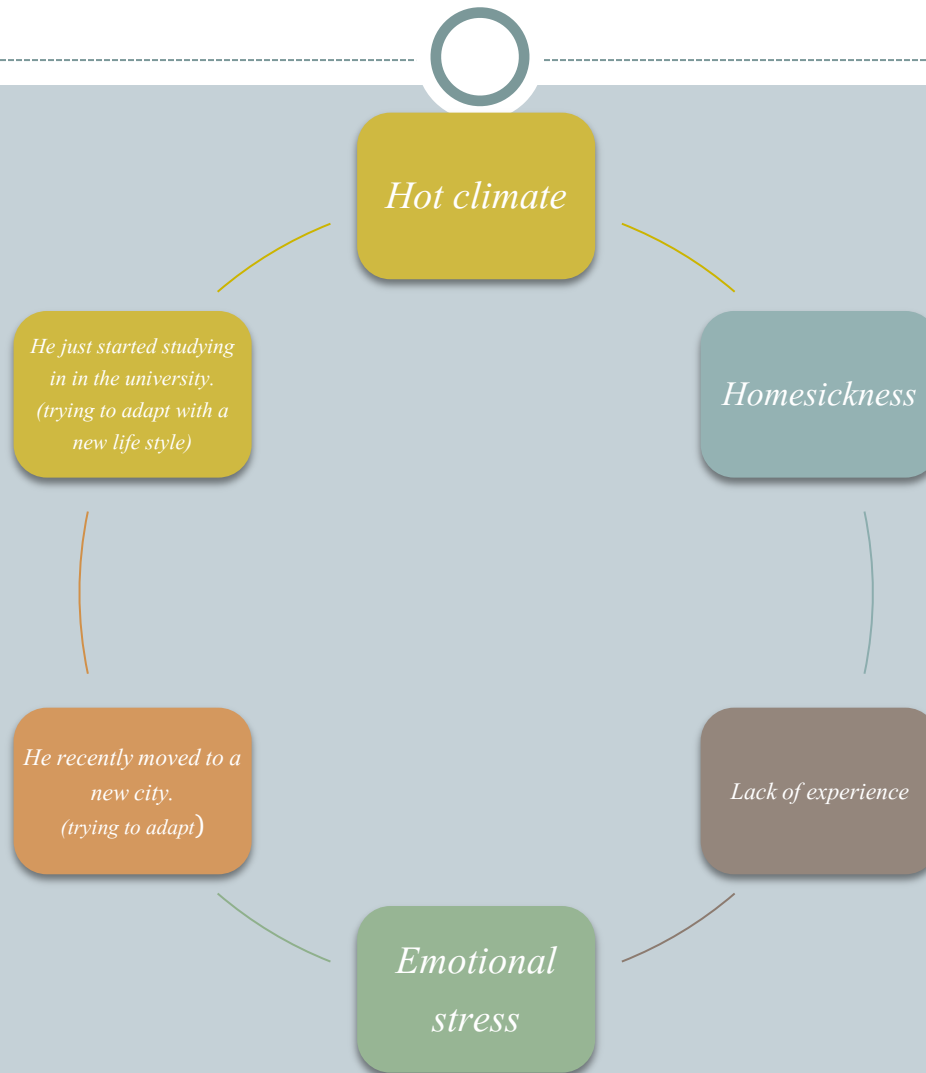
*Increase of
heat, produced
from
exercising*

*Decrease
evaporation
because of
humidity*

*Reda is
sweating a lot
during the race*

*The climate
was very hot*

Important Factors



Factors that may increase sweating



*Increased
sympathetic activity*

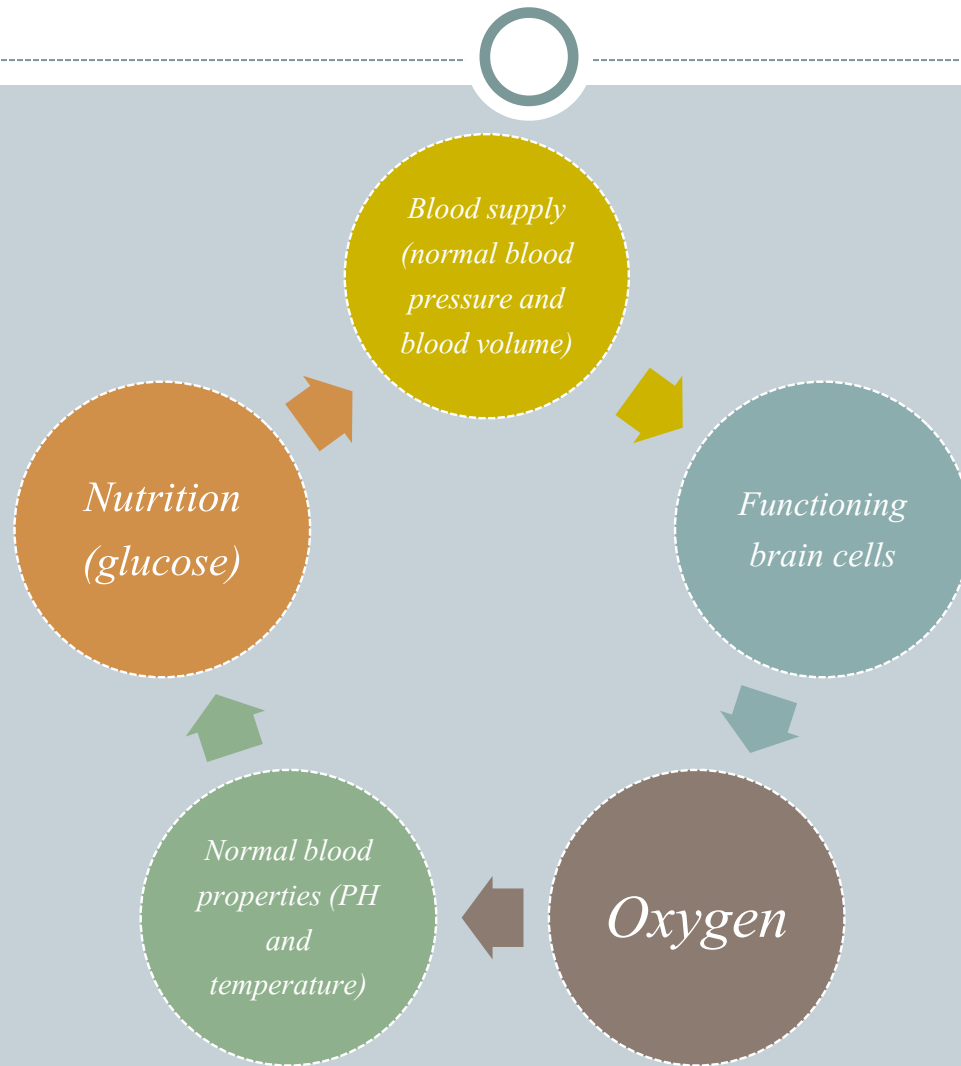


Hot environment



Exercising

The physiological factors required for the brain to work efficiently and to maintain consciousness



Causes of losing consciousness



Low blood pressure



Low glucose level

He vomited twice because of ...



Stimulation of the vagus nerve

Causes of his stress



*Being new to the
university
environment*



*Being away
from his
family*



*Stressed
because of
the race*

Possible questions



What could go wrong and the causes of unconsciousness?

- × *Not having enough oxygen supply.*
- × *Hypoglycemia.*
- × *Lost of electrolytes balance.*
- × *Decrease of blood flow to the brain. (Nonfunctioning brain cells)*
- × *Heart problems.*
- × *Abnormal blood chemistry (blood electrolytes), pH, and temperature.*

What are the factors associated with excessive sweating?

- × *Hot weather.*
- × *Increase heat production by exercising muscles.*
- × *Decrease evaporation because of humidity.*
- × *Increased Sympathetic activities.*
- × *Fever.*
- × *Chronic infections. E.g. tuberculosis.*
- × *Increased catabolism, such as in cancer.*
- × *Increased thyroxin secretion.*

Possible questions



What do we loose in sweat?

- × *Water.*
- × *Electrolytes. (E.g. Na^+ , k^+)*

What are the causes of vomiting?

- × *Stimulation of the vagus nerve, which supplies the stomach. (Vasovagal Syncope)*
- × *Psychogenic causes (e.g. worries, stress).*
- × *Gastric irritation or inflammation.*
- × *Intestinal obstruction.*
- × *Food poisoning.*

What did the doctor do to Reda?

- × *An Intravenous fluid IV (5% dextrose & 0.9 sodium chloride)*
- × *Advise him to drink more fluid.*
- × *Asked him to get the university counseling service.*

Possible questions



What are the factors affecting homeostasis?

- × *Excessive sweating.*
- × *Hypoglycemia.*
- × *Dehydration.*
- × *Blood loss.*

What is the basis of first-aid management?

- × *Check his vital signs (such as blood pressure, pulse rate, body temperature & respiratory rate.)*
- × *Check his state of hydration.*
- × *Examine his heart & lungs & the nervous system to detect any abnormalities.*

Best of luck!



This is not the only source of studying PBL

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