

VITAMIN CASE STUDIES

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A patient presents to the emergency department with restlessness and mild confusion. The patient's spouse states that his oral food intake has been inadequate for the past month because of "binge drinking" The patient has a past medical history of alcoholic liver disease. On day 2, the patient's restlessness progresses to combative behavior, increased confusion, nystagmus and leg tremor.

What vitamin deficiency may be present?

There might be a thiamin deficiency present (Westfal, 2018).

What medical diagnosis may be given related to this vitamin deficiency?

The medical diagnosis that may be given related to a thiamin deficiency is Wernicke-Korsakoff syndrome (Westfal, 2018).

Name 3 factors that may have contributed to this vitamin deficiency.

Three factors that may have contributed to this vitamin deficiency are: alcohol decreases thiamin absorption, alcohol increases thiamin excretion, and alcoholics consume a poor diet without enough thiamin (Westfal, 2018).

The patient was noted to have a high blood lactic acid level. Provide an explanation regarding this vitamin's function as to why the level was high.

The patient's blood lactic acid level may have been high because thiamin is needed to convert pyruvate to acetyl-coA. When there is a thiamin deficiency it cannot be converted. Lactate is made instead. The lactate accumulates, which increases the lactic acid levels in blood (Westfal, 2018).

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A 15-year-old vegetarian boy presented with easy fatigue, breathlessness, numb hands and feet, and pain in the legs on walking, noted during the past few weeks. Paleness had also been noted by the parents for about 2 years, although these findings became more obvious within the last few weeks. The vegetarian patient has not consumed any food of animal origin for many years. Besides, the family only rarely ate fresh fruits or vegetables. The patient was diagnosed with macrocytic anemia.

What two vitamin deficiencies may be present?

The two vitamin deficiencies that might be present are folate and vitamin B12 (Westfal, 2018).

Based on the symptoms, which one appears more likely? Why?

Based on the symptoms, a B12 deficiency seems more likely. The biggest indicator is the numbness in the hands and feet and pain in the legs when walking. This can be caused by peripheral neuropathy, which occurs when there is a B12 deficiency (Westfal, 2018).

What lab values would you look at to confirm both the diagnosis of macrocytic anemia and the confirmation of the vitamin deficiency?

The lab values I would look at to confirm the diagnosis of macrocytic anemia and a B12 deficiency are serum folate, erythrocyte folate, serum vitamin B12, serum methylmalonic acid, and serum homocysteine (Westfal, 2018).

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Earnest, a 32-year-old male, comes to you with some strange symptoms. He has been extremely fatigued lately. His wife had to help him into your office because the pain in the joints of his legs is so bad he can barely walk. He has what he describes as a rash on his legs, but upon inspection you realize that the "rash" is actually small local hemorrhaging. You recognize this as a problem with the integrity of blood vessel walls. On a hunch, you ask to look at his mouth, and notice that his gums are bleeding slightly.

What vitamin deficiency does Earnest have?

Earnest has a vitamin C deficiency (Westfal, 2018).

What is the deficiency disease called?

The deficiency disease is called scurvy (Westfal, 2018).

What factors in his clinical presentation led to your conclusion?

The factors in his clinical presentation that led to this conclusion are the fatigue, the small local hemorrhaging (petechiae), and that his gums are bleeding (Westfal, 2018).

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While working in an impoverished area of the world, you see a young girl, with bizarre looking, dry bumpy skin. This patient complains of dry eyes, diarrhea, joint pain and “getting sick a lot.” During the exam, there is a loss of power and soon you realize that your young patient cannot see you in the dim light.

What is the vitamin deficiency?

The vitamin deficiency is vitamin A (Westfal, 2018).

What factors in her clinical presentation led to your conclusion?

The factors in her clinical presentation that led to my conclusion are night blindness, dry eyes (xerophthalmia), and her dry bumpy skin (follicular hyperkeratosis) (Westfal, 2018).

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The mother of a 2-year-old boy started to notice that his legs were starting to bend outwards and they were not getting any better. As he was starting to walk, his left foot was bending inwards. The family lives in northern Canada. A dietitian completes a complete assessment on the boy and finds he does not drink milk or eat fish.

What condition do you suspect?

I suspect that he has rickets (Westfal, 2018).

What factors in his clinical presentation led to your conclusion?

The factors in his clinical presentation that led to my conclusion is that he does not eat fish or drink milk. Also, that his legs are bending outward and his left foot is bending inward (Westfal, 2018).

What recommendations would you make?

I would recommend that he begin taking a vitamin D supplement daily and add some fish and milk into his diet (Westfal, 2018).

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A friend of the family was told by their doctor that they had high cholesterol. They wanted to treat it using a 'natural' dietary supplement but it resulted in a symptom of flushing and more critically, liver damage.

What vitamin may have caused these symptoms?

Niacin may have caused these symptoms (Westfal, 2018).

Was the intake inadequate or in excess? What are the DRI recommendations?

The intake was in excess. We know this because of flushing which is caused by a niacin toxicity.

Also, niacin can be taken for cholesterol in large doses which indicates that it is excess. DRI recommendations for niacin are an RDA of 16 mg/day for male and 14 mg/day for females.

There is a UL of 35 mg/day (Westfal, 2018).

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A 25-year-old female has recently heard about the ketogenic diet and stopped eating carbohydrates, including fruits and vegetables and all grains. She has noticed redness around her mouth, cracking in the corners of her mouth and her tongue appears red.

What vitamin(s) deficiency may be present?

There is most likely a riboflavin deficiency present. It is possible that the female is also deficient in niacin (Westfal, 2018).

She is not willing to stop the ketogenic diet. What diet recommendations would you make?

For a riboflavin deficiency, I would recommend that she have milk and milk products. Milk is allowed on the ketogenic diet and it is an excellent source of riboflavin. Eggs and meat are also a great source that are allowed on the diet. For a possible niacin deficiency, I would recommend she drink coffee, snack on peanuts, and have meat, fish, and poultry. All these foods are ketogenic diet approved and a good source of niacin (Westfal, 2018).

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References

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