

A 16-year-old boy with a history of ulcerative colitis presents to the physician complaining of diarrhea and a rash. He states that his appetite has been decreased recently, and also complains of nausea and abdominal pain in addition to watery diarrhea. He has an erythematous rash on his distal arms and legs that "burns". His mother reports that he has had poor concentration and has been irritable lately. Vital signs are stable. Examination reveals a beefy red tongue that appears swollen. Abdominal examination is normal. The rash resembles a sunburn and is located on his distal arms and legs. It is symmetrical and tender to palpation. Neurological examination is normal. This patient's symptoms are most likely due to a deficiency of which of the following vitamins?

- ☐ A. Thiamine
- ☐ B. Riboflavin
- ☐ C. Niacin
- ☐ D. Pyridoxine
- ☐ E. Cyanocobalamin

Submit

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- ☐ A. Thiamine [4%]
- ☐ B. Riboflavin [12%]
- ☒ C. Niacin [68%]
- ☐ D. Pyridoxine [6%]
- ☐ E. Cyanocobalamin [9%]

[Proceed to Next Item](#)**Explanation:**User Id: XXXXXXXXXX

Deficiency of niacin (vitamin B₃) leads to pellagra, which is characterized by diarrhea, dermatitis, dementia, and if severe, death. Pellagra is common in third world countries where the main diet consists of cereal or corn, but can also be seen in people with bowel disease that interferes with vitamin absorption. Patients with pellagra typically present with gastrointestinal complaints (nausea, abdominal pain, or epigastric discomfort) along with glossitis and watery diarrhea. The characteristic dermatitis seen in pellagra occurs in sun exposed areas and resembles a sunburn; it is also typically bilateral and symmetric. As the rash progresses, the skin becomes hyperpigmented and thickened. Mental status changes can range from poor concentration to irritability, aggressiveness, and dementia. Death can occur in severe niacin deficiency if untreated. Treatment of pellagra is niacin replacement.

(Choice A) Deficiency of thiamine (vitamin B₁) causes beriberi or Wernicke-Korsakoff syndrome. These conditions are characterized by neurologic and psychiatric symptoms, and are often seen in alcoholics or patients who have had weight loss surgery.

- ☒ C. Niacin [68%]
☐ D. Pyridoxine [6%]
☐ E. Cyanocobalamin [9%]

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(Choice A) Deficiency of thiamine (vitamin B₁) causes beriberi or Wernicke-Korsakoff syndrome. These conditions are characterized by neurologic and psychiatric symptoms, and are often seen in alcoholics or patients who have had weight loss surgery.

(Choice B) Deficiency of riboflavin (vitamin B₂) can lead to cheilosis, glossitis, seborrheic dermatitis (often affecting the genital areas), pharyngitis, and edema and/or erythema of the mouth.

(Choice D) Pyridoxine (vitamin B₆) deficiency causes irritability, depression, dermatitis, and stomatitis. It can also cause an elevated serum homocysteine concentration, which is a known risk factor for venous thromboembolic disease and atherosclerosis.

(Choice E) Deficiency of cyanocobalamin (vitamin B₁₂) causes macrocytic anemia and peripheral neuropathy.

Educational objective:

Niacin (vitamin B₃) deficiency causes pellagra, which is characterized by diarrhea, dermatitis, dementia, and possibly death.

Time Spent: 2 seconds

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