

Disorders of uric acid metabolism/Questions and case studies

Questions

- In humans, carbamoyl phosphate is a precursor for the biosynthesis of:**
 - A - uridine monophosphate
 - B - Inosine monophosphate
 - C - urea
 - D - glutamine
- The metabolites of vitamin B₁₂ play a role in:**
 - A - Catabolism of fatty acids with an odd number of carbon atoms
 - B - In the formation of acetyl-CoA from pyruvate
 - C - During the transfer of the CH₃- group from tetrahydrofolate coenzyme to homocysteine
 - D - In the synthesis of palmitate
- All of the statements below regarding purine biosynthesis nucleotides are correct except:**
 - A - PRPP is a substrate in this metabolic pathway
 - B - 2 nitrogen atoms of the purine cycle are formed from glutamine
 - C - Formation of N-glycosidic bond only after completion of base structure
 - D - Folate cofactors are involved in the carbons of the purine cycle
 - E - Inosine monophosphate is a precursor to both AMP and GMP.
- Gout is caused by an excessive increase in the concentration of uric acid in the blood. The cause can be both overproduction and insufficient excretion. To recognize this situation, ¹⁵N-labeled amino acid can be administered. Which one is best for this purpose?

Answers

Case reports

Female patient treated for acute leukemia

A 3-year-old girl was admitted with a diagnosis of acute lymphocytic leukemia. She received IVs, allopurinol, 2nd day of vincristine therapy, prednisone, methotrexate, etc. Discharged home in 5 days. She continued therapy at home (prednisone, allopurinol). Added chemotherapy again in a month. Then she got thrush in her mouth, she couldn't eat.

Laboratory results (gradually during the month):

S-urea	4.0	5.0	1.3	0.7 (mmol/l)		
S-creatinine	62	88	62	62 (μmol/l)		
S-uric acid	714	547	238	113	137	184 (μmol/l)
white blood cells	56,300	3,700	2,800	3,700 (count/ml of blood)		

Questions:

- How do you explain the high uric acid level (1st examination performed after 5 days of hospitalization, after discharge)?
- Why was the uric acid already normal during the next examinations?
- Why was there a urea level of 0.7 mmol/l?
- What other tests will confirm this finding?

Answers

Links

Related articles

- Ureagenesis disorders
- Antiuratics
- Arthritis uratica

Source

- MASOPUST, Jaroslav - PRŮŠA, Richard. *Patobiochemie metabolických drah*. 1. edition. Praha : Univerzita Karlova, 1999. 182 pp. pp. 113- 114. ISBN 80-238-4589-6.

