

SIW

Theme: «Hypervitaminosis D»

Plan

I. Definition

II. Etiological causes of disease

III. Classification

IV. Pathogenesis

V. Clinics

VI. Diagnostics

VII. Differential diagnostics

VIII. Treatment

Definition:

Hypervitaminosis D - a pathological condition caused by D-vitamin intoxication, accompanied by hypercalcemia and deposition of calcium salts in many internal organs.

-occurs in children of the first 2 years of life, but the effects of D-vitamin intoxication can last for life in the form of various lesions of the cardiovascular, nervous, urinary systems, immunity disorders.

The main causes:

1. Overdose of vitamin D - in combination of taking preparations of fish oil, excess of calcium and phosphorus in food, deficiency of vitamins A, B, C, high-complete protein. (not toxic doses of vit.D for child are 1000-30000 IU)

2. Hypersensitivity to vitamin D - it means that sensitization of the child's organism before the introduction of the drug in the cases of repeated preventive courses. (in the anamnesis: fetal hypoxia, intracranial birth trauma, nuclear jaundice, stress, dysfunction of the gastrointestinal tract, severe hypotrophy, exudative diathesis)

Classification

Degrees	Disease period	Disease course
1-st mild	Initial	Acute
2-nd moderate	Clinically obvious (swing) period	Chronic
3-d severe	Reconvalescence	
	Residual	

• VITAMIN D:

7-DEHYDROCHOLESTEROL

UV radiation in sunlight ↓ Inhibited by melanin

VITAMIN D3

Bound to Vit D binding protein ↓ Transported to liver

25-Hydroxylase

25-D

NORMAL 25 D

1 α Hydroxylase

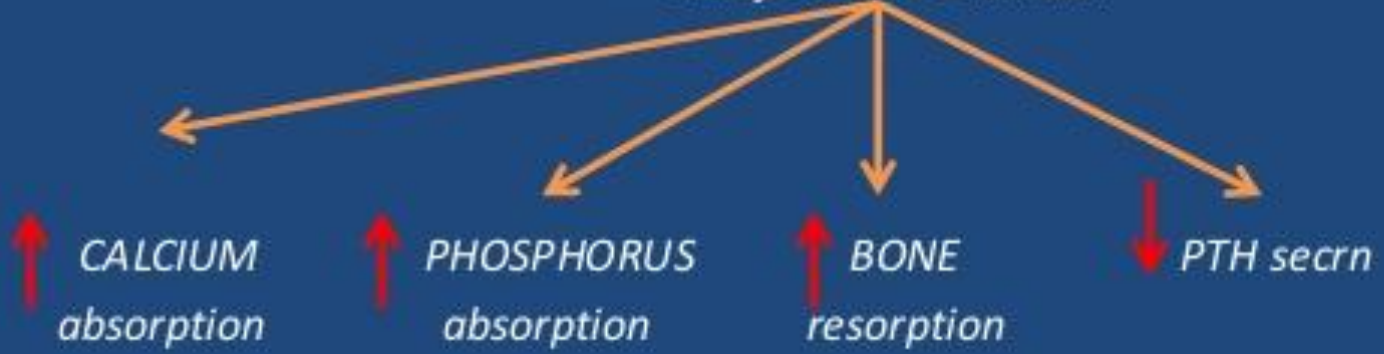


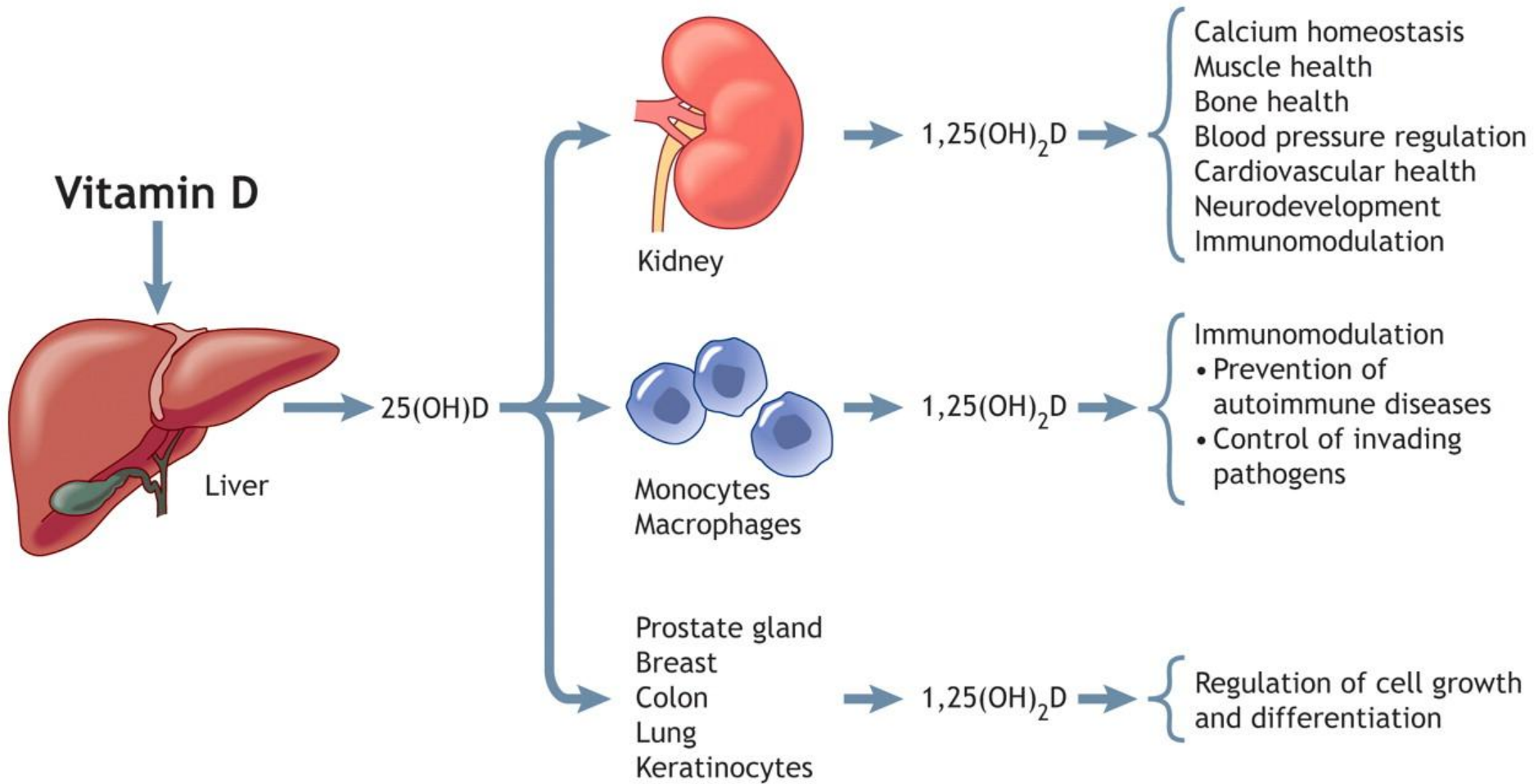
Kidney

1,25 D

LOW 1,25 D

Binds to intracellular receptor and forms a COMPLEX





CRITERIA FOR DIAGNOSIS OF HYPERVITAMINOSE DIAGNOSIS D DEPENDENCE ON THE DEGREE OF severity

1-st degree	2-nd degree	3-degree
<p>a) lack of toxicosis</p> <p>b) decrease appetite</p> <p>c) changes CNS in the form of irritability, sleep disorders</p> <p>d) a flat curve body weight</p> <p>e) hypercalciuria Sulkovicha +++).</p>	<p>a) toxicosis moderately expressed</p> <p>b) diarrheal phenomena in the form of decline appetite, vomiting; delay or weight loss</p> <p>c) hypercalcemia, hypophosphatemia, hypercythemia, hypomagnesemia</p> <p>d) hypercalciuria (Sulkovich's trial +++ or ++++).</p>	<p>a) bright severe toxicosis</p> <p>b) persistent vomiting</p> <p>c) a significant weight loss</p> <p>d) accession various complications (bronchitis, pneumonia, pyelonephritis, myocarditis, etc.)</p> <p>e) abrupt changes biochemical indicators.</p>

Clinics

At acute form

- a sharp decrease in appetite (up to anorexia)
- sleep disturbance
- thirst
- polyuria
- persistent vomiting
- alternating constipation with diarrhea
- weight loss.
- dehydration, the tongue becomes dry, the skin is inelastic, the turgor of tissues is reduced.
- Characterized by subfebrile condition, tachycardia, excitation, followed by retardation, convulsive syndrome.

Complications: liver and spleen enlargement, renal failure, anemia, cardiomegaly, calcification of coronary vessels, nephrocalcinosis, development of interstitial pyelonephritis and glomerulonephritis can occur.

At chronic form

- The skin of the babies becomes flabby, dry, gray-yellow in color;
- premature closure of the large fontanel;
- disturbances of the cardiovascular system, there is systolic noise. There are serious changes in the ECG, there is a muffled tone of the heart;
- In the urine, the calcium concentration rises, possibly signs of chronic pyelonephritis;
- Hypervitaminosis leads to a significant reduction in body weight and the possible development of dystrophy;
- The infants close the seams between the flat bones of the skull early, radiographically revealed



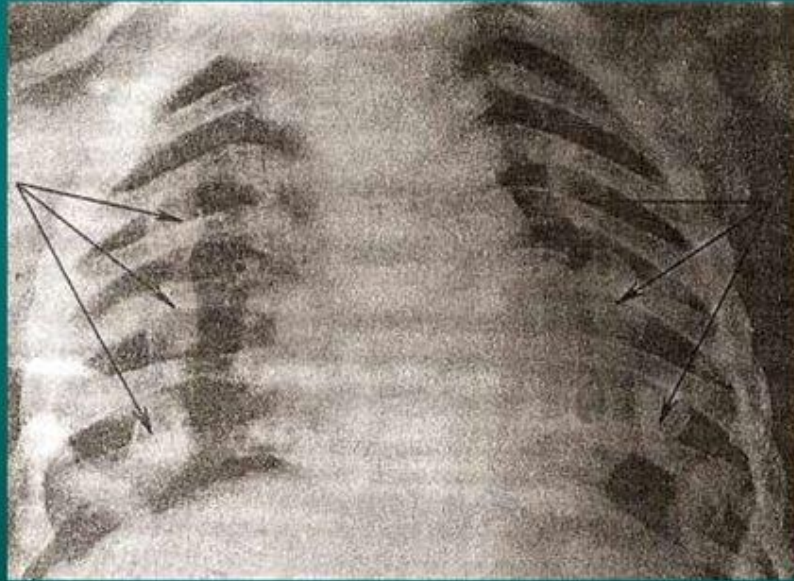
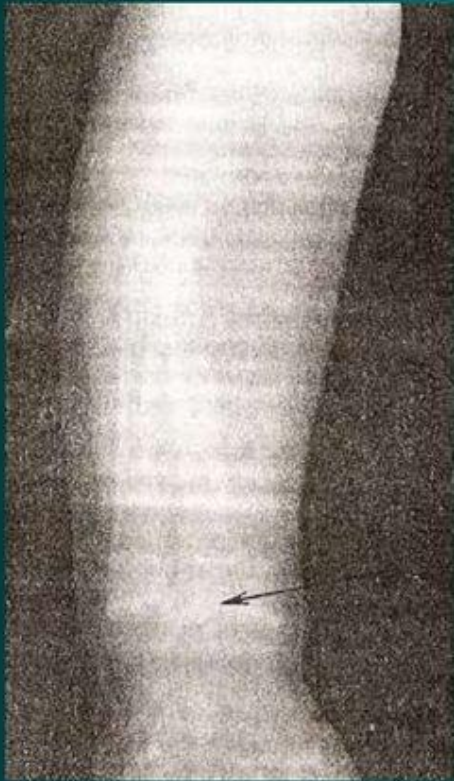
FIGURE 4-18. Four English survivors of "idiopathic" infantile hypercalcemia, attributed to moderately high vitamin D intakes. Pictures at earlier (A) and later (B) age. (Courtesy of JA Black.)

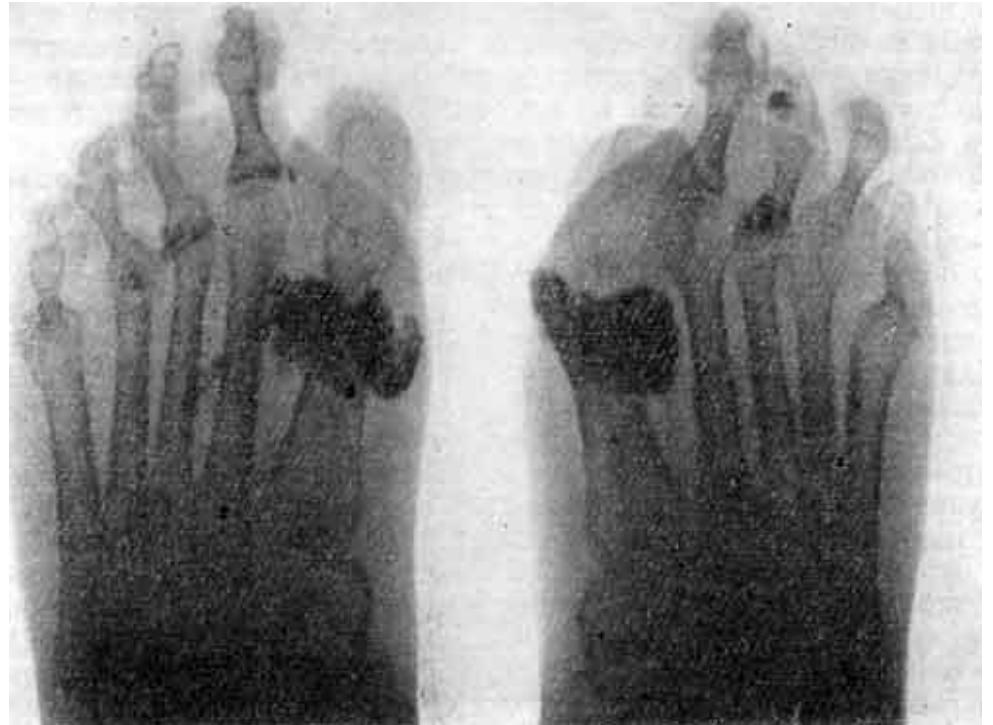
Diagnostics

1. Physical examination
2. CUC
3. CBC
4. Biochemical blood analyses
5. Sulkovich, Zimnitskii probe test.
6. Radiography of tubular bones
7. ECG
8. Ultrasound of kidneys, brain
9. Biopsy of damaged organs

Results

- **a blood test:** an increase in the content of calcium, magnesium, phosphorus in the blood;
- **urinalysis:** in the urine the calcium, protein content is increased, there may be blood (indicating the beginning of kidney damage);
- **Biochemical-** increased calcitonin concentration, and decreased parathyroid hormone; hypercalciuria, hyperphosphaturia,
- **Sulkovich test:** is performed to determine the large amount of calcium excreted in the urine. +++
- **Radiography of bones:** signs of increased deposition of calcium salts in bones are noted.
- **ECG-** there is a muffled tone of the heart;
- **biopsy*-** of muscles, kidneys, liver, stomach, heart vessels, deposits of calcium salts





Differential diagnostics

- Hyperparathyroidism
- Chronic nephritis
- idiopathic calcification
- bone tumors
- leukemia.

Treatment

- **Necessary measures:** abolition of vitamin D and calcium preparations, infusion
- therapy, diuretics.
- **Supporting therapies:** glucocorticoids, calcitonin, vitamins A and E.
- **Regime:** the limitation of insolation.
- **Diet** with a decrease in food products containing large amounts of calcium (milk, cheeses, cottage cheese, etc.).
- **Treatment of hypercalcaemic conditions** consists in the abolition of vitamin D and calcium preparations, the appointment of phytin to reduce absorption of calcium in intestine.
- Fluid administration of the liquid (inside, intravenously) is shown. When pronounced hypercalcemia prescribe calcitonin preparations, the most popular
- of which synthetic calcitonin is considered - myacalcic.
- steroid hormones, antihypertensives