Basic nutritional indicators

Clinical markers

Malnutrition is associated with a number of organ abnormalities. We list only the most important:

- psychological deterioration – reduced ability to concentrate, personality change, apathy
- respiratory deterioration – reduction of vital capacity, functional residual capacity and reduction of partial oxygen tension
- circulatory deterioration – bradycardia, hypotension, decrease in CO/CI, decrease in CVP
- alteration of GIT and liver function
- alteration of the immune system – leukopenia, lymphopenia

The **anthropometric parameters** we monitor include:

- weight or its loss → position in the percentile chart
- skin fold over the triceps
- arm circumference

Biochemical markers

- We use the **values of acute phase proteins** (acute phase proteins, APP, PAF). APP **levels rise in correlation with inflammatory activity** , which in intensive care is often related to a catabolic state.

Acute phase proteins:

- fibrinogen
- CRP
- orosomucoid
- α-2 macroglobulin
- α-1 antitrypsin

Visceral proteins:

- albumin
- prealbumin – is the most widely used indicator of protein-nutritional deficit, values <0.1 g/l indicate malnutrition. Its half-life is 2 days. It is a more sensitive indicator than albumin, it is a **negative reactant** of the acute phase → its level decreases during inflammatory activity
- transferrin
- retinol binding protein – from plasma proteins with a short half-life, it is considered the most suitable candidate

In the urine , we determine the **nitrogen balance** by calculating the urea waste in the urine for the relevant time period.

Recognition of catabolism

- decrease in albumin, transferrin, lipids, cholesterol
- lymphopenia, anemia
- hyperglycemia (due to insulin unreactivity)
- signs of infection, but plasma levels of APP may be reduced
- a decrease in visceral protein levels

An important sign of catabolism is a **decrease in weight** and especially a **decrease in LBM = *lean body mass*** . This is body tissue with fat subtracted. I.e. includes muscles, proteins, enzymes. Even if the organism is in catabolism, the effort is not to use LBM to gain energy.

Moderate malnutrition is indicated by a drop in albumin to 25-30 g/l and a total lymphocyte count of 900-1500, for **severe malnutrition** a drop in albumin < 25 g/l and a total lymphocyte count < 900. **Body weight 15-20% lower than the ideal weight (table), associated with evident muscle weakness and impairment of physical resistance, should alert the doctor to the risk of complications from malnutrition.**

Links

Related articles

- Calorimetry

Source

HAVRÁNEK, Jiří: *Other monitoring.*