

POCT Also in Pediatrics?

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Abstract

Homeostasis (balance in the internal environment) is one of the basic vital functions [1]. We look for acute homeostasis disorders and/or monitor already known abnormalities. Less often we look for information about changes in homeostasis in the chemical and physical analysis of tissues, especially the examination of body fluids. only after a few tens of minutes, which is too late for a diagnostic and therapeutic consideration of a critically ill patient. Here is the significance of POCT in clinical medicine. But this type of examination also has its place in primary care.

Keywords: Homeostasis; POCT; CRP

What is POCT?

It is a word formed from the first letters of four English words:

- Place.....place and situation suitable for testing.
- O.....preposition, without clinical meaning.
- Care.....intensive care does not prevent testing.
- T.....testing outside specialist laboratories.

This is not the result of the examination, but information for the tester... take the test, there are conditions for the tests.

The goal is to detect new defects in homeostasis (hypoxia) or monitor already diagnosed deviations (hyperglycemia). It can be argued that diagnostic tasks are performed in healthcare facilities by laboratories of clinical biochemistry, hematology, immunology, etc. Classic procedure:

- Admission to bed or outpatient examination.
- Examination schedule.
- Sampling of biological material...mostly it concerns body fluids, tissues obtained by biopsy, etc.
- Examination of biological material.
- Communication of examination results.
- Repeating tests?

Technical and logistical problems of institutional treatment

It is clear from the above that the normal laboratory service does not suit acute medicine. The maximum speed of information is important. POCT- means that the situation is appropriate for an individual test to be performed regardless of treatment or nursing activity. Over the years, many tests affecting basic areas of homeostasis have been introduced into acute medicine:

- Acidity-acid-base balance.
- Volume of body fluids-(help can weighing, bioelectrical impedance).
- Hemocoagulation-d-dimers, fibrinogen.
- CRP-inflammation, most often infection [4].
- Glycemia.

A minimal amount of the examined material (most often body fluid) is placed in contact with the sensor of the pocket analyzer for tens of seconds and the result appears on the display.

POCT in clinical practice

So - we take a few ml of blood, we state what we want to examine, we deliver the sample to the laboratory under the conditions that the laboratory requires. This stage of the examination is called pre-analytical, and as can be seen, a number of errors can occur during the period:

- Defective blood collection-compression of the arm "to keep it flowing" leads to spoil the sample-artificially higher K*.
- Long clinic-laboratory interval.
- Do not fast before taking the patient.
- Treatment recommendations not respected some recommendation (keep the samples in room temperature...).

In the pre-analytical phase, the above errors can affect the results by up to 10 percent plus or minus. In normal clinical-laboratory operation, a result can be expected in tens of minutes.

The easy availability of laboratory tests leads to the fact that they are prescribed without consideration of the benefit to the patient - help in determining the diagnosis. Sometimes we come across a completely filled out request for an examination - all tests are required, even if there is no reason. On the contrary, the false positivity of the test values and their faulty interpretation opens the way to unnecessary treatment of the client. At the same time, the costs of treatment rise. In the United States, the unnecessary costs of examination and treatment, so-called overdiagnosis, overtreatment are estimated at 20 percent of all health care costs, and many more damage to clients' health [2].

POCT in an emergency situation

After the introduction of POCT procedures into clinical practice, there were positive to enthusiastic responses to the method, but also critical opinions. POCT results and tests have been criticized for some inaccuracies compared to results from large laboratories. There were rumors that the PCOT was having problems interpreting the results.

However, the advantages of determining POCT are obvious - it can be performed repeatedly in an interval of tens of minutes as a therapy-leading element. It protects the patient against drug overdose. Extensive studies have been conducted comparing the determination of some biochemical values in the operation of a classic laboratory and by the POCT method. The results were the same. Studies of inflammatory markers (CRP, lactate, procalcitonin) in the POCT regime are important in relation to the clinical findings evaluated, e.g. by the clinical scales like the PRISM III method [5].

POCT for children

The benefit POCT is

- Download speed,
- Minimal invasiveness (1 drop of blood),
- Result within tens of seconds,
- It is possible to repeat the test immediately - for a number of values, we are not interested in the individual change of the parameter, but above all in the trend of the observed values.

It is clear that the normal laboratory service does not suit acute medicine. The maximum speed of information is important. POCT means that the situation is suitable for an individual test to be performed regardless of treatment or nursing activity. Over the years, POCTs have been introduced into acute medicine, which have an irreplaceable role. Fast information is the way to make a diagnosis and start a treatment during transport. POCT is the entry gate on the axis medical assistance - transport - emergency.

POCT in primary care

POCT is a part of rational guideline for acute pediatric medicine for thousands of practitioners.

It is mostly about help in making decisions - infection? If the clinical findings are not clear, then determination of CRP by the POCT method can answer the question---values higher than 60 mg/l indicate a bacterial infection... (but in case of confusion between CRP and clinical findings, the clinic has priority).

Or: we often have to choose antibiotic therapy "blindly" empirically, and the drop in CRP shows that the choice was correct. We have repeatedly written about CRP, and its determination is a typical representative of the POCT method [3].

Children may suffer from a chronic disease, requiring repeated tests, for example determining blood sugar levels in a diabetic child. Children over the age of 12 can examine this typical POCT examination themselves and interpret the result - for example, a blood sugar level of 2 mmol/l - is bad, call someone and eat sugar.

TOCP in pediatrics belongs from preventive medicine to emergency situations.

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