

STUDY ON INFLUENCING FACTORS OF BIOCHEMICAL TESTS

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Abstract: Biochemical tests can accurately reflect the patient's current physical condition. Clinical diagnosis and treatment options for many diseases must be completed with the help of biochemical test results. This medical testing method has a very high usage rate in hospitals and has other functions. Testing and diagnostic methods have incomparable advantages. Biochemical tests play an extremely important role in clinical diagnosis and treatment. For the diagnosis and treatment of diseases, whether the biochemical test results are accurate will have a critical impact on the diagnosis and treatment effects of the disease. If the biochemical test results are inaccurate, it will have a negative impact on the diagnosis and treatment of the disease. If the sample is contaminated during the sampling process, even if it can be collected again, it will take a lot of time and materials, and may even cause dissatisfaction among patients. Although overall, all major medical institutions in my country have a complete and strict set of quality control measures when conducting biochemical tests, it is undeniable that there are still many biochemical test quality risks. To this end, we must start from all aspects to strengthen the management of biochemical test quality and eliminate all interference factors that may adversely affect the biochemical test results. This article reviews research on factors that may affect biochemical test results.

Keywords: Biochemical tests; Influencing factors; Drug effects; Blood routine; Sample tubes

1 INFLUENCING FACTORS BEFORE BIOCHEMICAL TESTING

In current medical work, the proportion of biochemical tests is constantly increasing, and related research content is also increasing. In the process of biochemical testing, the links involved are very complicated, starting from sample collection and storage of sample tubes. Whether the operations are standardized and reasonable enough will have a key impact on the accuracy of the biochemical test results. Therefore, it is necessary to ensure that every link is correct to ensure that it will not adversely affect the biochemical test results. Only by ensuring high-quality test results can we provide a strong basis for clinical diagnosis, observation of therapeutic effects, and judgment of condition and prognosis. In order to maximize the advantages and important role of biochemical testing, it is necessary to eliminate various factors that may affect the accuracy of biochemical testing results.

1.1 Sample Tube Influencing Factors

Sample tubes are a very important part of the biochemical testing process and are mainly responsible for collecting and storing blood samples. At present, sample tubes in major medical institutions in my country are mainly divided into two categories. One is a plastic tube made of transparent polymer material polypropylene, and the other is a glass tube made of glass. Most hospitals now choose When using vacuum blood collection tubes, different types of sample tubes will be used to respond to different inspection needs [1]. In biochemical testing work, there is no strict control mechanism for the type of sample tubes used in the industry, and hospitals can flexibly choose according to their own needs [2]. However, from the actual situation, although the glass sample tube can be recycled and used repeatedly, there is a problem of possible contamination. Once the sample tube is not cleaned, it will have a serious impact on the next biochemical test [3]. Although plastic tubes and vacuum tubes have relatively good chemical stability and sealing properties, possible contamination issues and the adverse effects of anticoagulants on blood samples cannot be ignored [4].

1.2 Factors Affecting the Patients Being Examined

Usually, there are strict dietary regulations and medication regulations before patients undergo biochemical tests [5]. If the patient does not strictly comply with the relevant requirements, it will have a greater impact on the final results of the biochemical test. For example, if a patient fails to fast or takes medications illegally before undergoing an examination, it will significantly interfere with the examination results, leading to abnormal test results and eventually requiring a re-examination [6]. Therefore, medical staff need to instruct patients to be tested to make preparations for biochemical tests in strict accordance with relevant regulations [7].

One day before collecting blood samples, try to eat a light diet, reduce the intake of high-fat, high-calorie, seafood and other foods, avoid eating excessive amounts of greasy foods, foods with high sugar content, and avoid drinking alcohol and smoking a lot. In principle, no food or water should be eaten or drunk from 9:00 to 12:00 pm one day before the biochemical test to prevent interference with the accuracy of the biochemical test on the second day. Especially patients with diabetes and hyperlipidemia need to stop eating 10 to 12 hours before undergoing biochemical testing and ensure that they are in a fasting state when undergoing biochemical testing on the second day. This can maximize the accuracy of the test results [8]. However, the fasting time should not exceed 16 hours, because excessive hunger will reduce

serum albumin, blood sugar, etc., and increase serum bilirubin; 1 day before the test, the person being tested needs to quit drinking and reduce smoking, so as to avoid Affects the acetaldehyde results; special attention should be paid to the fact that certain drugs and whether the mental state of the person to be tested is stable will also affect the test results [9]. When tested after taking birth control pills, the enzyme content in the liver will be abnormal; and emotional instability or depression may interfere with blood sugar, lactic acid and other test results. Therefore, before conducting biochemical tests, it is necessary to make relevant medical instructions and inquire in detail about the patient's medication and diet [10]. If the person being tested has been taking anti-diabetic drugs for a long time, the interference factors caused by the anti-diabetic drugs need to be fully considered. Moreover, some patients who have been taking anti-cancer drugs and chemotherapy drugs for a long time may also have problems such as abnormal biochemical test results. Therefore, It is necessary to exclude the adverse effects of drug factors on biochemical tests [11].

1.3 Blood Sample Collection Factors

If the sample is hemolyzed, the accuracy of the biochemical test results will be greatly affected. The main factors that cause hemolysis during sample collection include the following aspects: (1) The blood collection operation is not standardized. For example, the tourniquet is tied for too long and is not loosened in time, resulting in excessive blood collection suction; (2) Air is mixed during the blood collection process; (3) Anticoagulant is used irregularly or no anticoagulant is used [12]; (4) Hemolysis caused by excessive centrifugal force during the inspection process. Therefore, when collecting blood samples, the relevant operating procedures must be strictly followed, and the subject should be placed in a supine or sitting position, preferably in a sitting position. After blood collection, the tourniquet should be released promptly to avoid prolonged Banding, and at the same time, blood sample collection is completed within 1 minute [13].

2 INFLUENCING FACTORS IN BIOCHEMICAL TESTING

2.1 Specimen Inspection Time Factor

There are strict time regulations when conducting biochemical tests. After blood samples are collected, biochemical testing needs to be completed within a specified time [14]. A large amount of research data shows that if blood samples are not collected for timely biochemical testing, the final test results will be greatly affected, thus affecting the clinical diagnosis of the disease and the selection of treatment options. Therefore, after obtaining the blood sample, it should be sent to the laboratory department for corresponding biochemical testing within the specified time [15]. Under normal circumstances, blood samples need to complete the biochemical test within 4 hours. If the test is not completed within the time limit, the blood sample is prone to hemolysis problems, and may also cause changes in blood sugar and potassium values in the blood, resulting in biochemical test results Distortion causes biochemical tests to fail. Therefore, the inspection time of the samples to be inspected must be strictly controlled [16].

2.2 Instrument and Equipment Factors

Whether the biochemical test equipment and instruments are in optimal condition and whether the relevant operating parameters are adjusted accurately will have an important impact on the biochemical test results. Therefore, before conducting biochemical testing, the performance and parameters of relevant equipment and instruments must be checked and adjusted to ensure that the testing instruments are in optimal operating condition [17]. In addition, the laboratory department also needs to perform regular maintenance and upkeep of instruments and equipment, and needs to formulate detailed work systems and management systems. The department must regularly conduct business training and work assessments for inspection personnel to improve the theoretical knowledge and professional ethics of inspection technicians so that each inspector can strictly abide by operating procedures [18]. The work performance of each inspector is evaluated through assessment, and the evaluation results are directly linked to individual salary and job promotion, so that inspectors can always maintain a high level of working status [19].

3 INFLUENCING FACTORS AFTER BIOCHEMICAL EXAMINATION

After the inspection is completed, the inspection personnel are required to review the report. Although the current biochemical tests in major hospitals are highly intelligent and automated, and the analytical biochemical analyzers can automatically issue reports, it must be noted that all biochemical tests cannot be handed over to the biochemical analyzers. After completing the inspection work, the inspector must check whether the test items are consistent with the applied items, and whether the samples submitted for inspection are consistent with the applied quantity and inspection quantity. Only by doing these things well can errors in biochemical testing be avoided [20].

4 CONCLUSION

In clinical medicine, biochemical tests are very critical. Whether biochemical test results are accurate and effective will have a critical impact on the clinical diagnosis and treatment of diseases. For this reason, all interfering factors that may affect the accuracy of biochemical test results must be controlled. Starting from the selection of sample tubes, we

should prepare the medical instructions for the person being tested and find out whether the patient has been taking special drugs such as contraceptives, hypoglycemic drugs, lipid-lowering drugs, and anti-cancer drugs for a long time. Strictly control the storage time of samples to be inspected, and the inspection must be completed within the specified time, and samples that do not meet the regulations will be rejected. Before and during the inspection, the performance inspection and parameter adjustment of the instruments and equipment should be carried out, and indoor and inter-room quality control should be carried out. At the same time, the inspection personnel should have sufficient sense of responsibility and strictly check that the number of samples to be inspected and the number submitted for inspection are consistent. , confirm that the test items are consistent with the doctor's orders to ensure the accuracy of biochemical test results.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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