

# Application Value of Coagulation Function Test in Prognosis of Patients with Cardiovascular and Cerebrovascular Diseases

Jing Luo\*

Ruikang Hospital Affiliated to Guangxi University of Chinese Medicine, Nanning 530011, China. E-mail: luojingfish@163.com

**Abstract:** Objective: to explore the application value of coagulation function test in the prognosis of patients with cardiovascular and cerebrovascular diseases. Methods: from December 2018 to December 2019, 100 patients with cardiovascular and cerebrovascular diseases were randomly selected as the study group. According to the follow-up results of patients, they were divided into study group A (good prognosis, n = 64) and study group B (disability or death, n = 36) 100 subjects served as the control group. The test results of coagulation function of the two groups were analyzed retrospectively. The test results of the study group before and after treatment were compared with those of the control group, and the test results of the study group A and study group B after treatment were compared. Results: the coagulation function of the study group after treatment was significantly improved compared with that before treatment ( $P < 0.05$ ), and there was a significant difference between the two groups before treatment ( $P < 0.05$ ), and there was no difference after treatment ( $P > 0.05$ ); after treatment, the coagulation function of study group A and study B was significantly different ( $P < 0.05$ ). Conclusion: coagulation function test has a certain application value for the prognosis of patients with cardiovascular and cerebrovascular diseases, and can be used as an index to judge the patient's condition and treatment effect, which has good application value in clinical practice.

**Keywords:** Coagulation Function; Cardiovascular and Cerebrovascular Diseases; Prognosis; Application Value

In recent years, the incidence of cardiovascular and cerebrovascular diseases in clinical increased significantly, and showed an obvious upward trend. The elderly population is the main disease population of the disease. Most patients with cardiovascular and cerebrovascular diseases have poor prognosis and have high death rate. Therefore, it is necessary to pay attention to it and carry out intervention treatment as soon as possible. Clinical studies have pointed out that<sup>[1]</sup>, cerebral hemorrhage is a symptom of most patients with cardiovascular and cerebrovascular diseases, so hemostasis is an important means to treat this type of patients. With the deepening

of research, some studies have pointed out<sup>[2]</sup> that coagulation factor is the key factor affecting the hemostatic effect and prognosis of patients with cardiovascular and cerebrovascular diseases. Therefore, the detection of coagulation function in patients with cardiovascular and cerebrovascular diseases can provide valuable scientific reference for the prognosis judgment of patients. Based on this, 100 healthy subjects and 100 patients with cardiovascular and cerebrovascular diseases were included in this study.

## 1. Data and methods

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## 1.1 General information

From December 2018 to December 2019, 100 patients with cardiovascular and cerebrovascular diseases were randomly selected as the study group. According to the follow-up results, they were divided into study group A (good prognosis, n = 64) and study group B (disability or death, n = 36). Then 100 healthy subjects who received physical examination in our hospital at the same time period were selected cases were used as control group. In the control group, there were 56 male subjects and 44 female subjects in the control group, all aged from 51 to 75 years old, with an average of (63.62 ± 5.49) years old. There were 57 male patients and 43 female patients in the 100 patients group in the study group, all aged from 51 to 75 years, with an average of (64.02 ± 5.32) years. The study met the requirements of the ethics committee, and was carried out with the knowledge of the patients and their families and the permission of the ethics committee. The baseline data of the control and study groups were compared by SPSS20.0 system, and there was no difference (P > 0.05).

## 1.2 Method

The blood coagulation function of the two groups were analyzed retrospectively. Test method: the fasting venous blood was collected and placed in the test tube with sodium citrate anticoagulant. The force line was performed for 10 minutes at the speed of 3000rad / min.

The upper plasma was tested by automatic blood coagulation instrument.

## 1.3 Observation index

The results of coagulation function test were compared. It includes PT (prothrombin time), TT (thrombin time), APTT (activated partial thromboplastin time), FIB (fibrinogen), AT III (antithrombin III), D-D (D-dimer), ET-1 (endothelin-1), a total of 7 indexes.

## 1.4 Statistical treatment

Statistical data are divided into counting data (%) and measurement data ( $\bar{x} \pm s$ ) according to the way of expression. Chi square value ( $\chi^2$ ) and T are used for detection, P value is used for evaluation, and SPSS20.0 is used for data processing. If and only if P < 0.05, there is statistical significance.

## 2. Results

### 2.1 Comparison between the study group and the control group before and after treatment

The coagulation function of the study group after treatment was significantly improved compared with that before treatment (P < 0.05), and there was significant difference between the two groups before treatment (P < 0.05), but there was no difference after treatment (P > 0.05). See **Table 1** for details.

**Table 1.** Comparison between the study group and the control group before and after treatment.

| Index       | Study group                   |                                   | Control group  |
|-------------|-------------------------------|-----------------------------------|----------------|
|             | Before treatment              | After treatment                   |                |
| PT/s        | 10.52 ± 3.12 <sup>(2)</sup>   | 12.44 ± 0.86 <sup>(1) (3)</sup>   | 12.36 ± 2.20   |
| TT/s        | 13.75 ± 1.84 <sup>(2)</sup>   | 19.33 ± 2.56 <sup>(1) (3)</sup>   | 19.21 ± 3.63   |
| APTT/s      | 24.55 ± 3.13 <sup>(2)</sup>   | 30.05 ± 2.35 <sup>(1) (3)</sup>   | 29.57 ± 2.42   |
| FIB/g/L     | 4.04 ± 1.22 <sup>(2)</sup>    | 3.43 ± 1.02 <sup>(1) (3)</sup>    | 3.10 ± 1.12    |
| AT III/mg/L | 397.66 ± 29.75 <sup>(2)</sup> | 318.53 ± 30.60 <sup>(1) (3)</sup> | 312.53 ± 23.47 |
| D-D/mg/L    | 0.84 ± 0.25 <sup>(2)</sup>    | 0.10 ± 0.03 <sup>(1) (3)</sup>    | 0.13 ± 0.02    |
| ET-1/pg/ml  | 1.34 ± 0.13 <sup>(2)</sup>    | 0.86 ± 0.08 <sup>(1) (3)</sup>    | 0.84 ± 0.07    |

Note: (1) Compared with the study group before treatment, there was significant difference (P < 0.05); (2) Compared with the control group, there was significant difference (P < 0.05); (3) Compared with the control group, there was no difference (P > 0.05).

### 2.2 Comparison of study group A and study group B after treatment

After treatment, there was significant difference in

coagulation function between study group A and study group B (P < 0.05). See **Table 2** for details.

**Table 2.** Comparison of study group A and study group B after treatment.

| Index       | Study group A | Study group B | t       | P      |
|-------------|---------------|---------------|---------|--------|
| PT/s        | 13.05±0.82    | 10.64±1.73    | 9.4416  | 0      |
| TT/s        | 20.88±2.61    | 13.48±3.10    | 12.7433 | 0      |
| APTT/s      | 32.16±3.04    | 27.29±3.18    | 7.5633  | 0      |
| FIB/g/L     | 3.12±0.99     | 3.66±0.95     | 2.6560  | 0.0092 |
| AT III/mg/L | 265.31±28.97  | 327.66±30.14  | 10.1819 | 0      |
| D-D/mg/L    | 0.10±0.10     | 0.50±0.21     | 9.6693  | 0      |
| ET-1/pg/ml  | 0.79±0.18     | 1.02±0.29     | 4.8951  | 0      |

### 3. Discussion

The study pointed out that the coagulation function test for patients with cardio cerebrovascular disease, especially for patients with thrombosis and need hemostasis treatment, can effectively evaluate the treatment effect of patients and judge the prognosis of patients<sup>[3]</sup>. In this study, PT, TT, APTT, FIB, AT III, D-D and ET-1 were selected to test the coagulation function. The basis was that after the onset of the disease, exogenous coagulation factors would pour into the blood and participate in the blood circulation process, stimulating the external coagulation system and causing hypercoagulability. In addition, the damaged vascular endothelium can accelerate the diffusion of endogenous coagulation factors and stimulate the endogenous coagulation system. When exogenous and endogenous sources are activated at the same time, it will increase the consumption of fibrinogen, produce a large amount of fibrin, and cause thrombosis and coagulation dysfunction<sup>[4]</sup>.

The results showed that the coagulation function of patients in the study group was significantly different from that in the control group before treatment, which indicated that compared with healthy people, the coagulation function of patients with cardiovascular and cerebrovascular diseases had obvious obstacles; in addition, after treatment, the coagulation function of the study group was significantly improved compared with that before treatment, and there was no difference between the two groups, suggesting that the effective treatment can promote the improvement of coagulation

function in patients with cardiovascular and cerebrovascular diseases; the difference of coagulation function among patients with different prognosis of cardiovascular and cerebrovascular diseases is obvious, which indicates that the coagulation function of patients with good prognosis is better than that of patients with poor prognosis, and the prognosis of patients with cardiovascular and cerebrovascular diseases has a certain correlation with coagulation function.

In conclusion, coagulation function test has a certain application value for the prognosis of patients with cardiovascular and cerebrovascular diseases. It can be used as an index to judge the patient's condition and treatment effect, and has good application value in clinic.

### References

1. Ruan J. The value of coagulation function test in prognosis of patients with cardiovascular and cerebrovascular diseases (in Chinese). *Clinical Laboratory Journal (Electronic Edition)* 2020; 9(3): 39–40.
2. Zhou L, Yang P. Analysis of the prognostic value of blood coagulation function in patients with cardiovascular diseases (in Chinese). *Cardiovascular Disease Journal of Integrated Traditional Chinese and Western Medicine* 2018; 15: 34.
3. Lai H, Li Y, Jiang F, *et al.* The value of coagulation function test in the prognosis of patients with cardiovascular and cerebrovascular diseases (in Chinese). *Prevention and Treatment of Cardiovascular Disease* 2017; (8): 78–80.
4. Wang M, Gong G, Liu Y. The value of coagulation function test in the prognosis of patients with cardiovascular and cerebrovascular diseases (in Chinese). *Psychological Doctor* 2018; 24(23): 33–34.