

## Study on Venous Thrombosis Caused By Peripheral Venipuncture in Patients with Acute Leukemia

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**Keywords:** acute leukemia patients; Peripheral venipuncture; Central venous catheter; Venous thrombosis; Blood coagulation function

**Abstract: Objective:** To study and analyze the incidence of venous thrombosis (PICC-DVT) and the causes of PICC-DVT after peripheral venipulmonary catheterization (PICC) in patients with leukemia. **Methods:** Among the patients with leukemia who were admitted to our hospital on September 1, 2018 solstice and treated by PICC during the period of September 1, 2019, 42 cases were randomly selected by random number table method as the subjects of this study. On this basis, patients were divided into venous thrombosis group and non-venous thrombosis group according to whether they had picc-dvt or not. Statistical methods were used to analyze the differences between the two groups including blood routine and disease prognosis. **Results:** Of the 42 participants in this study, 9 (21.43 percent) developed venous thrombosis. The number of patients without this complication was 33, accounting for 78.57%. After this peripheral venipuncture into the central venous catheter, the patient experienced the fastest onset of venous thrombosis on day 4 and the slowest on day 29. The average was  $(10.24 \pm 7.81)$  days. According to statistics, there was no significant difference between the two groups of patients in the indicators of infection, the use of hemostatic drugs, chemotherapy or not, the length of catheterization and other aspects. But in terms of whether the prognosis in high-risk state, significant difference, statistically significant, the probability of prognosis of high risk for venous thrombosis group is significantly higher than the other group of patients, among them ( $P < 0.05$ ). **Conclusion:** Through the research, we learn that in patients with acute leukemia, if patients at high risk condition, then finally happened usm - DVT patients with the symptom of probability compared with the ordinary higher. At the same time, such patients did not develop pulmonary embolism. Just make sure that patients are actively treated to help eliminate blood clots while the tube remains in place.

### 1. Introduction

Due to the particularity of acute leukemia, many patients with this disease often need intravenous chemotherapy with very high frequency of infusion and other means to alleviate the disease, treatment. In this process, in order to effectively reduce the pain of patients' treatment and avoid high frequency venipuncture, many hospitals often choose to provide long-term treatment for patients by establishing venous channels. In this context, peripheral venipuncture of central venous catheter (CVT) has also been associated with a significant increase in clinical use in patients with acute leukemia. However, the use of this PICC is accompanied by a significantly increased probability of subsequent venous thrombosis in such patients. In the event of such a clot, not only could previous treatment be compromised, but in severe cases, the patient could even develop a pulmonary embolism that could threaten his or her life. Therefore, in this study, 42 randomly selected patients with leukemia treated by PICC during the period of September 1, 2018 solstice and September 1, 2019 in our hospital were selected as subjects of this study by random number table method. To discuss the probability of the formation of venous thrombosis and the reasons that affect the occurrence of this phenomenon. Hope to contribute to the improvement of the safety of acute leukemia treatment in China.

## **2. Materials and Methods**

### **2.1 General Materials**

Among the patients with leukemia who were admitted to our hospital on September 1, 2018 solstice and treated by PICC during the period of September 1, 2019, 42 cases were randomly selected by random number table method as the subjects of this study. On this basis, patients were divided into venous thrombosis group and non-venous thrombosis group according to whether they had picc-dvt or not. Among them, the number of male patients was 18, and the number of female patients was 24, with the lowest age of 26 years old and the highest age of 57 years old, and the average age was (39.17±4.81) years old. In the course of PICC treatment for these 42 patients, 7 patients were recurrent, while the remaining 35 patients were primary.

### **2.2 Methods**

#### **2.2.1 Analysis of means of PICC treatment operation**

In choosing to perform the PICC procedure, the study chose catheters made by bard corporation of the United States. Type is single - chamber three - way valve type. In the process of PICC treatment for patients, the nurses responsible for the operation have rich clinical puncture experience, and can effectively operate the catheter in the daily process, and perform scientific catheter maintenance for patients. All steps in this process follow the instructions provided by the American company. Prior to such PICC treatment, the consent of patients and their families must be obtained and the corresponding informed consent must be signed.

#### **2.2.2 Analysis of diagnostic methods for venous thrombosis**

Generally speaking, the formation of venous thrombosis can be effectively judged by the following two aspects. First, if the patient experiences any of the following symptoms during the course of the catheter, there is a high probability of venous thrombosis: swelling, pain, and a sudden increase in the intensity of the tension in the soft tissue. Second, patients can be judged whether they have the symptoms of venous thrombosis by performing color doppler ultrasound of diseased blood vessels.

#### **2.2.3. Analysis of treatment methods for patients with venous thrombosis**

All patients with venous thrombosis were treated by tube. In addition, choose urokinase, Patients were given 25 micrograms of intravenous infusion every day for three to two weeks. In addition, patients are treated with anticoagulant drugs. The name of the drug is warfarin sodium tablets.

#### **2.2.4 Inspection means**

By collecting two milliliters of blood, the patient was examined accordingly. The patient must be kept in an empty state after the morning, and the patient's blood must be stored in the appropriate test tube. Centrifuge accordingly within four hours. Next, the blood routine and other indicators of the patients were comprehensively tested with the aid of hematology analyzer.

### **2.3 Statistical Method**

With SPSS22.0 as the statistical software of this study, all experimental data were recorded into it for statistical processing. In the processing of measurement data, we adopt the means of mean ± standard deviation. In the processing of counting data, percentage was selected for expression, and chi-square test was used as the statistical method. In addition, P<0.05 was selected as the standard to test the statistical significance.

## **3. Results**

### **3.1 Analysis of venous thrombosis**

Nine of the 42 patients in the study developed venous thrombosis, or 21.43 percent of the total.

The number of patients without this complication was 33, accounting for 78.57%. After this peripheral venipuncture into the central venous catheter, the patient experienced the fastest onset of venous thrombosis on day 4 and the slowest on day 29. The average was (10.24±7.81) days.

Table 1 occurrence of venous thrombosis

patients	venous thrombus		the time of venous thrombosis		
	yes	no	earliest	latest	average time
42	9 (21.43%)	33(78.57%)	the 4th day	the 29th day	(10.24±7.81)day

### 3.2 Comparative analysis table of various influencing factors of patients in the two groups

According to statistics, there was no significant difference between the two groups of patients in the indicators of infection, the use of hemostatic drugs, chemotherapy or not, the length of catheterization and other aspects. However, in terms of whether the prognosis is high-risk state, the difference is significant and statistically significant. The high-risk prognosis probability of the group with venous thrombosis is significantly higher than that of the other group, in which P<0.05.

Table 2 comparative analysis of various influencing factors in venous thrombosis group and non-venous thrombosis group

Tape	Venous thrombosis group(9)	Non-venous thrombosis group(33)
AML/ALL	6/3	22/11
infectious/uninfected	5/4	20/13
chemotherapy/no chemotherapy	9/0	30/3
Use hemostatic/no hemostatic	4/5	19/14
first/continuously	7/2	29/4
prognostic high-risk group/non high risk group	7/2	4/29
the length of the tube	40.28±4.02	43.02±4.78

## 4. Discussion

In this paper, by means of retrospective analysis, leukemia patients who received this peripheral venipentesis and central venous catheter were divided into two groups, one group was patients who developed venous thrombosis after treatment, and the other group was patients who did not have this complication. Of the 42 patients in the study, nine ended up with the complication, or 21.43 percent of the total. The number of patients without this complication was 33, accounting for 78.57%. In addition, the earliest onset of this complication occurred on the third day after treatment, while the most recent onset occurred on the twenty-ninth day after treatment, averaging (10.24±7.81) days. In addition, after relevant statistics, we can find that there is no significant difference between the two groups of patients in the index of infection, the use of hemostatic drugs, chemotherapy or not, the length of catheterization, etc. However, in terms of whether the prognosis is high-risk state, the difference is significant and statistically significant. The high-risk prognosis probability of the group with venous thrombosis is significantly higher than that of the other group, in which P<0.05.

So we can find that in the current to be reckoned with the onset of the acute leukemia probability under the time background, how the effective treatment for patients with PICC through this means, carry on the effective nursing care, and after the formation of venous thrombosis for effective treatment, has become a key subject of medicine. And through the retrospective analysis, we can find that, if can by identifying high-risk patients with this way, the prognosis for patients with acute leukemia after PICC treatment of thrombosis symptoms for effective prevention, is necessarily in an above to be reckoned with, and the life safety of patients is a more powerful safeguard. In addition, when such patients are found to have complications, they must be treated with active tube retention and use anticoagulant therapy to help them recover, so as to avoid the death of patients to the greatest extent.

## References

- [1] Lli Jianyun, Tu Chuanqing, Peng Ling, et al. Study on venous thrombosis caused by central venous catheter implantation through peripheral venipentesis in patients with acute leukemia [J]. *Thrombus and Hemostasis*, 2017(2).
- [2] Yuan Na, Jjiao Yinghua, Wang Zhe, et al. Study on prothrombin fragment 1+2 and venous thrombosis in patients with cervical cancer undergoing central venous catheterization via peripheral venipentesis [J]. *Chinese Journal of Advanced Physicians*, 2017, 40(2):111-114.
- [3] Gao Fangning, Guo Songlin, Shang Fang, et al. Effect of preventive anticoagulation on deep vein thrombosis in breast cancer patients after central venous catheterization via peripheral venipuncture [J]. *Chinese Journal of Vascular Surgery (Electronic Edition)*, 2018, v.10(1):40-42.
- [4] Liang Juan, Zhang Meihua, Pan Liya. Effects of targeted nursing intervention on venous thrombosis in patients with acute leukemia with PICC catheterization [J]. *Thrombus and Hemostasis*, 2017, 23(5):880.
- [5] Chen Saichuan, Leng Congyu, Yang Fan, et al. Incidence and influencing factors of thrombus after PICC catheterization in patients with acute leukemia [J]. *Primary Medicine BBS*, 2017, 21(24):3228-3229.
- [6] Liu Fengju, Hu Yanxia. Effects of targeted nursing intervention on venous thrombosis in patients with acute lymphoblastic leukemia (PICC) [J]. *Modern Medicine and Health*, 2017, 33(13):144-145.
- [7] Zhang Fang, Li Huiyu, Wang Ling, et al. Risk factors and prevention and nursing progress of PICC catheter-related venous thrombosis [J]. *Shanghai Nursing*, 2017, 17(2):71-73.