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The prevalence of port catheter complications among children with cancer in Amirkola pediatric Hospital from 2007 to 2020

Hassan Mahmoodi [1], Mohsen Mohammadi [2*], Ali Miri [3], Parisa Ebrahimzadeh [4]

1.Associate Profess of Infectious Disease,Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

2.Assistant Professor of Infectious Disease,Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

3.Student Research Committee, Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran.

4.MSc in Microbiolody, Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran.

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Dear Editor

A catheter port is an implant that allows to frequenting and long-term access to the central vein. Using of central venous implant ports is increasingly day to day, because using of peripheral venous for frequent injections and continuous intravenous infusions is difficult.

In comparison of different catheters with each other, the port catheter has more advantages than the central venous catheter, such as decreasing the possibility of contamination with external pathogens. Central venous catheter, related to infections is a common cause of nosocomial infections acquired in children with cancer. Complications of port placement can doubt on parents and even health care personnel on its usefulness in children with cancer (1) .Because no studies have been done to assess complications of port catheter in the north of the country from 2007 so, the aim of this study was detection complication of port catheter in children with cancer and Satisfaction rate of parents was Satisfaction rate designed (2).

This cross-sectional study was approved by the Ethics Committee of Babol University of Medical Sciences (IR.MUBABOL.REC.1399.421). from 2007 to 2020, 38 children with cancer who underwent

*Corresponding Author: Mohsen Mohammadi
Address: Assistant Professor of Infectious Disease,Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran
Tel: +98111263074 **. E-mail:** dr.mohamadi61@yahoo.com

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port catheter implantation and also the frequency of port complications was evaluated by age group, sex and other underlying variables. Patients' satisfaction with the port catheter was also assessed.

The mean age of the children was 7.21± 4.72 years (minimum age was one and maximum age was 18 years). The average catheter implantation period was 2.39 ± 1.66 years, which was at least one and at most 6 years. The mean times of hospitalizations were 17.34± 9.87 times (minimum one and maximum 40 times). The average duration of hospitalization of children with port catheter under chemotherapy was 3.39 ±1.92 days, which was at least one and at most 7 days. Port catheter complications were observed in 22 patients (57.9%). 22 patients (57.9%) of the patients with acute lymphocytic leukemia, 6 patients (15.8%) had rhabdomyosarcoma, 6 patients (15.8%) had neuroblastoma. Acute myeloid leukemia and Ewing sarcoma had frequency of 2 cases (5.3%). 20 patients (52.6%) of the patients had no fever and neutropenia, while 18 patients (47.4%) had fever and neutropenia in different hospitalizations .The most common complications of infection and displacement (26.3%) and pneumonia (51.8%) and the lowest reported complication was related to skin necrosis (5.3%) (Table 1). 20 patients (52.6%) of Parents were completely satisfied with the catheterization, 14 patients (36.8%) were satisfied, 2 patients (5.3%) did not express a specific opinion and also 2 (5.3%) were very dissatisfied. Variables of education level and location and occurrence of complications were not related to the level of parental satisfaction with the port catheter. In 20 children (52.6%) the catheter was removed and in 18 (47.4%) the child recovered without removal.

The most important finding of this study, detection of the complications of port catheter during 13 years in children with cancer who referred to Amirkola Children's Hospital that was detected 57.9% .

Differences in the prevalence of port catheter complications in cancer patients was depended to some factors such as sample size, population studied in the present study were children, type of catheterization (subcutaneous, open surgery), location of catheterization (cephalic vein, External jugular vein, Axillary, ...). One of the strengths of the present study was the prevalence of fever and neutropenia in children with cancer for who was implanted a port catheter. The results showed that 47.4% of children had fever and neutropenia

Evidence suggests that cannot be attributed this complication to port catheter complications directly, because chemotherapy and the nature of disease cause be weakened immune system and the child's exposure to external factors leads to infection, fever, and neutropenia. Fever and neutropenia are associated with a 35% increase in premature mortality and a 5 to 15% increase in overall mortality in cancer patients (3, 4).

In this study, the relationship between parents' education, place of residence and the complications with the parental of satisfaction from port catheter implantation was also investigated. The results indicate that the parents' satisfaction was independent of the level of education, place of residence and the incidence of complications due to the port catheter. This indicates that the port catheter can reduce the complications of cancer and chemotherapy, and parents seem to be satisfied with the comfort of their children with the port catheter.

The results of this study showed, according to the level of parental satisfaction, using of port catheter is accepted and can be cause more comfort and convenience for patients and their companions. But,

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according to the frequency of complications in the 38 children studied, it is not possible to suggest the implantation of a port catheter.

Table1: The frequency of distribution and percentage of port catheter complications in children with cancer

percentage	distribution	variables
		Movement port
7.73	28	No
3.26	10	Yes
		infection
7.73	28	No
3.26	10	Yes
		pneumonia
2.84	32	No
8.15	6	Yes
		Skin necrosis
7.94	36	No
3.5	2	Yes

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