

RETROSPECTIVE ANALYSIS OF CENTRAL VENOUS CATHETER RELATED THROMBOSIS IN PEDIATRIC ONCOLOGY PATIENTS: SINGLE CENTER STUDY

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BACKGROUND

CVC related thrombosis is a common complication that occur in children with cancer. There are many possible sequelae as phlebitis, pulmonary embolism and treatment consequences as intracerebral, intraabdominal bleeding and more. Patients are affected by LMWH administration and sometimes their oncologic treatment has to be postponed due to hemorrhagic complication following LMWH treatment. That may have significant impact for catheter selection considering risk of thrombosis. We reviewed all CVCs of all our treated patients over a five-year period

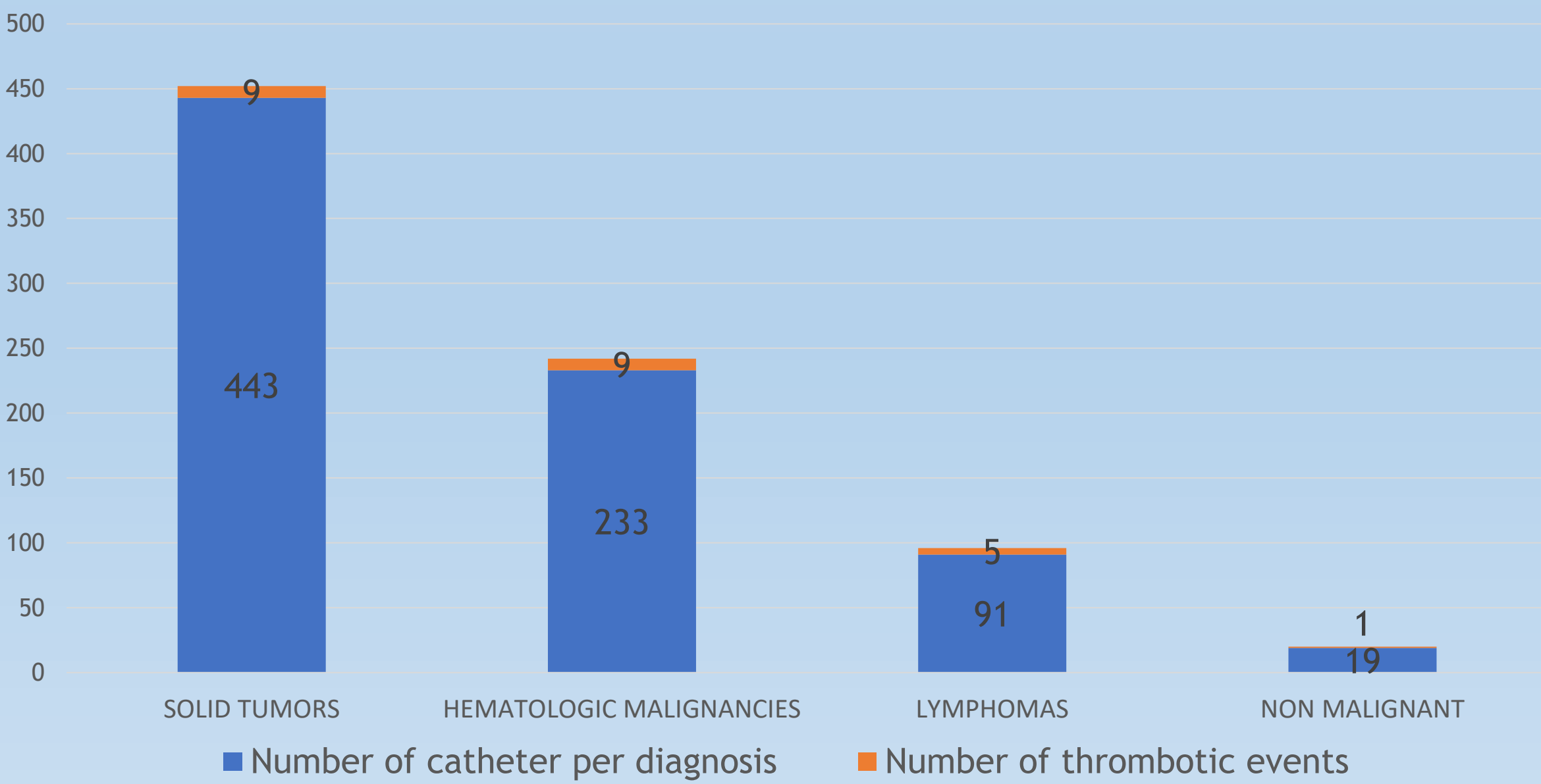
METHODS

We retrospectively analysed cohort of children with cancer who had insertion of at least one CVC from january 2018 to february 2023. Data were collected from our internal catheter database and from hospital patient and radiological information system. Most of them were inserted by our children oncologists in Pediatric Oncology Department in Brno(CZ), according to up-to-date insertion bundles and all of them were inserted in our hospital. We analysed every catheter from our database.

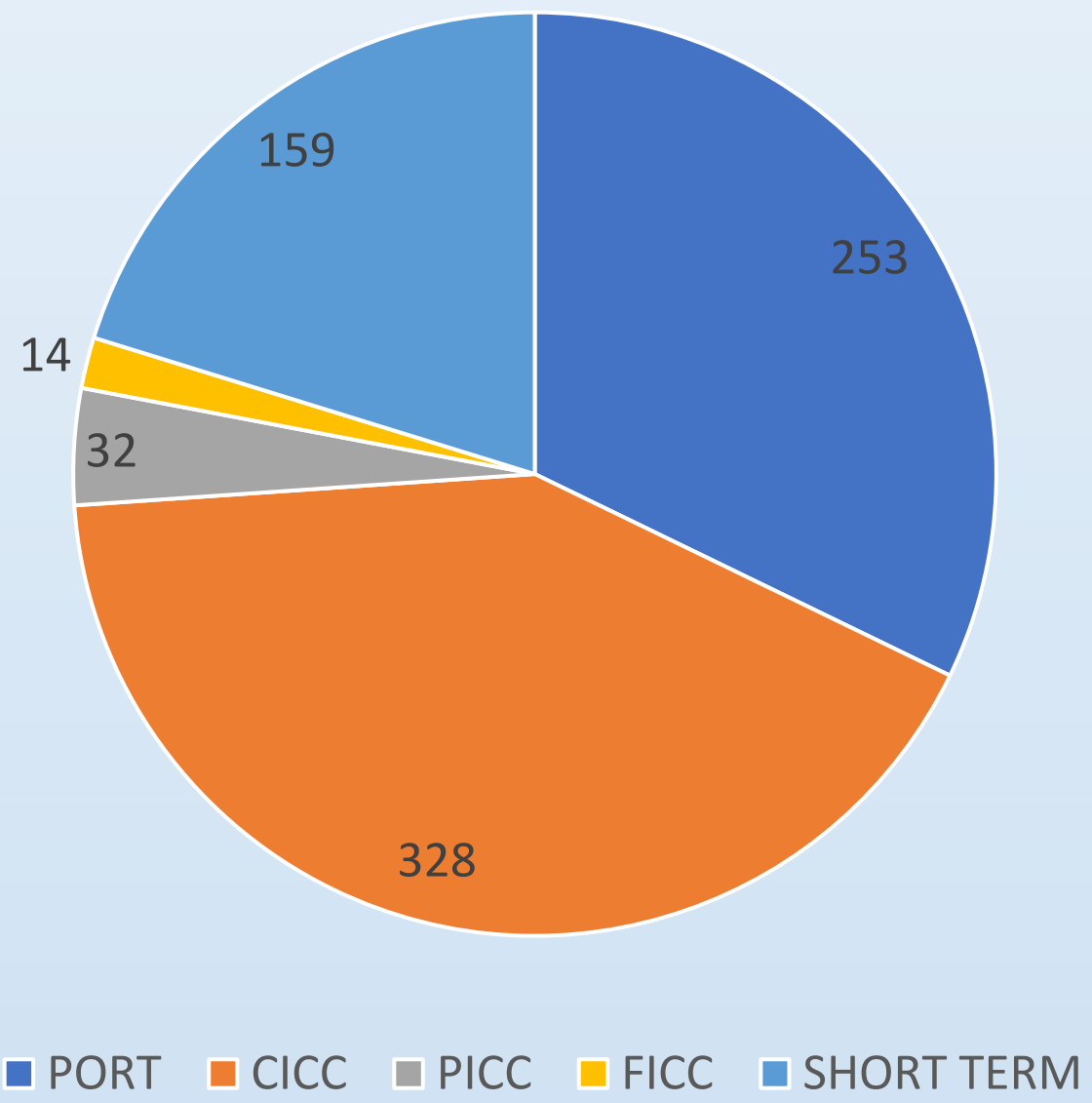
RESULTS

These data were not published yet. A total of 786 CVCs (total indwelling time 199702 days) were inserted in 518 pediatric oncological patients. 53 catheters are still in situ. 17 catheters weren't reviewed in detail due to lack or incomplete informations. Symptomatic CVC related thrombosis occurred in overall 24 (3%) cases (0,12/1000 catheter-days), asymptomatic in 28 (3,5%) cases (0,14/1000 catheter-days). In symptomatic cohort the thrombotic rate was 22%, and 1,7/1000 catheter-days (PICC); 20% and 1,7/1000 catheter-days (FICC); 3% and 3,6/1000 catheter-days (Non-tunneled short term); 1,6% and 0,03/1000 catheter-days (PORT); 1,5% and 0,07/1000 catheter-days (CICC). However there was significant difference between PICC subgroups. Thrombotic rate in 4Fr single lumen was 0% compared to 5Fr double lumen which was 37%.

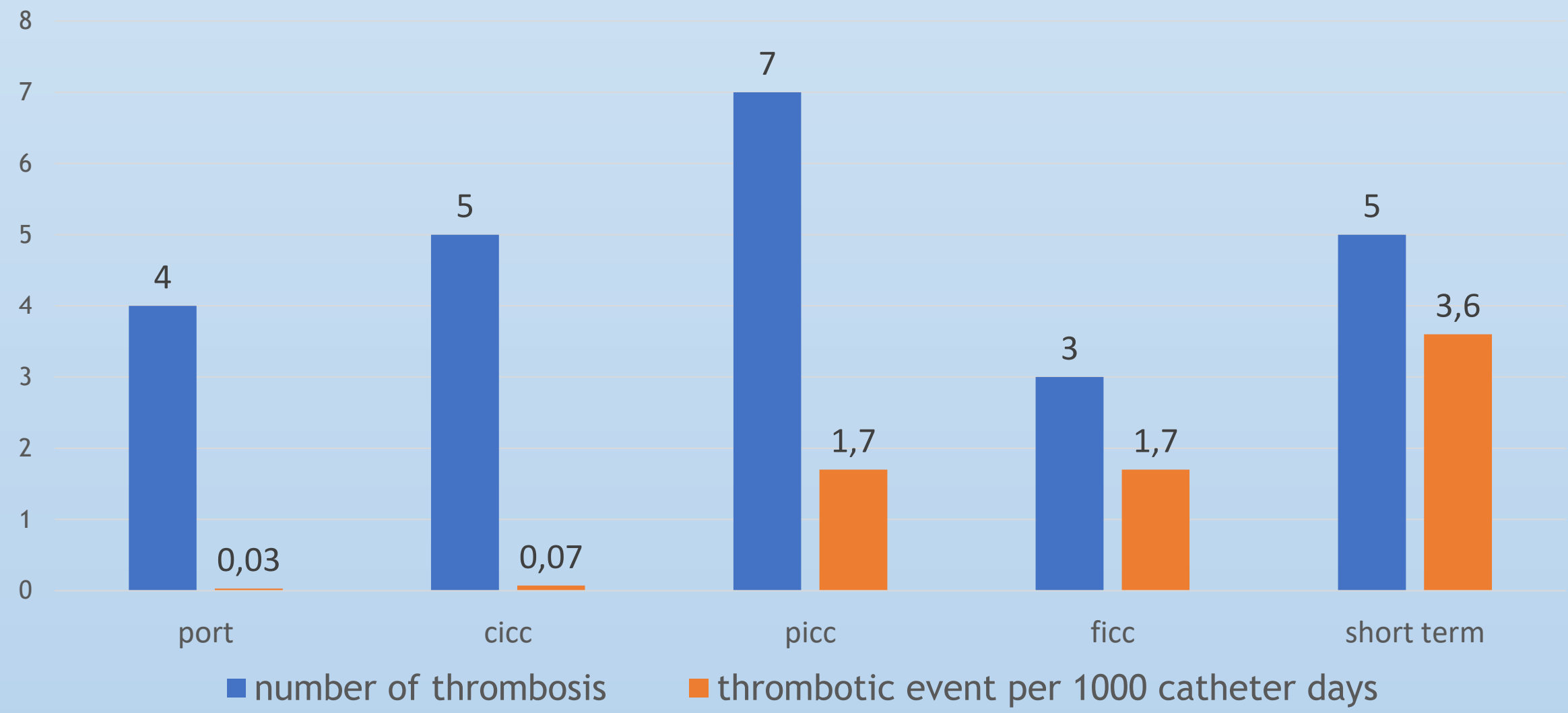
NUMBER OF CATHETERS/NUMBER OF THROMBOTIC EVENTS PER DIAGNOSIS



CATHETER TYPE, 5-YEAR PERIOD (TOTAL 786 CVC)



SYMPTOMATIC CVCrT FOR 5-YEAR PERIOD (TOTAL 786 CVC)



SYMPTOMATIC THROMBOSIS RATE ACCORDING TO CATHETER TYPE

CVC type	cases (%)	thrombotic events per 1000 catheter days
PORT	1,6	0,03
CICC	1,5	0,07
PICC	22	1,7
FICC	20	1,7
SHORT TERM	3	3,6
OVERALL	3	0,12

Generally symptomatic thrombosis were found in 5 Fr single lumen catheters in PORT group and in 5 Fr double lumen in group of CICCs, PICCs and FICCs. Only one CVCrT in 4 Fr single lumen FICC was detected.

SYMPTOMATIC CVCrT

Symptomatic CVCrT was defined as thrombosis in the vessel where catheter was inserted, confirmed by ultrasound due to clinical manifestation as pain, redness, swelling and increased filling of veins distally from insertion. AS symptomatic were also included those patients which had no clear clinical manifestation, but there were another symptoms and reasons that led physician to the suspicion of CVCrT and which resulted in Doppler ultrasound (generally catheter malfunction, d-dimer elevation, fever, screening for infectious focus). However US indication for these symptoms are questionable because many patients present these symptoms during their oncological treatment and complications as febrile neutropenia and ultrasound indication is very subjective from the perspective of the physician.

CONCLUSIONS

This is an comprehensive summary of CVCrT in cohort of pediatric oncology patients. According to our analysis the safest in term of symptomatic long-term CVCrT are CICCs and ports, the least safe are FICCs and PICCs. Although, subgroup of patients with 4Fr single lumen PICCs had very good results with no thrombosis at all.