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An analysis of the implementation of the procedures used to date for the insertion and care of peripheral and central venous insertions in newborns in various types of neonatal wards in Poland

Keywords:

peripheral venous insertions, central venous insertions, newborn, venous cannulation

Summary

Purpose:

The purpose of this thesis was to analyse the accepted procedures for the insertion and care of peripheral and central venous insertions in newborns in various types of neonatal units in Poland. The purpose also included comparing the procedures used in Poland to those described in Polish and foreign publications, as well as relating the procedures used to the recommendations of institutions and scientific associations in Poland and around the world

Material and methods:

Applications were sent to 405 hospitals that have a neonatal unit (neonatal unit, neonatal pathology neonatal ICU) in their structure, asking for consent to conduct a test among nurses and midwives. 203 facilities agreed to the test, 23 refused, and no response was received from 179 hospitals. Proprietary survey questionnaires were used to conduct the test. 3,000 questionnaires on peripheral insertions and 970 questionnaires on central insertions were sent out. A total of 2,441 questionnaires regarding peripheral insertions and 749 regarding central insertions were received back;

Results:

As many as 19% of test participants reported that their facilities did not have standards in place for the management of peripheral venous insertion. It is alarming that in the era of quality control of medical facilities' work by nationwide accreditation and quality control programs such things are still happening. Prophylactic peripheral venous insertions were

much more common in the lowest referral level hospitals than in others. It can be suspected that this was done without justification, just in case, as it were, since there are no proven indications for prophylactic peripheral insertion. Based on the results, it was found that nurses without a university education were statistically more likely to use no gloves at all, there were no significant differences for nurses with a master's degree compared to nurses with a bachelor's degree, while nursing staff with a bachelor's degree mostly indicated non-sterile gloves, slightly less often sterile gloves. As many as 61% of respondents reported that necrosis of the insertion site area occurs in the ward, where in the available literature the rate of this complication is between 11 and 25%. This indicates a lack of observation of the area around the insertion site, as well as careful care. Nursing staff in neonatal intensive care units described central insertion sites nearly 6% more often than declared by staff in the neonatal pathology unit. Worryingly, only 85% of those surveyed said there was a standard of central line management in the department. The incidence of complications associated with central vascular access placement depends on numerous factors, including the experience of the physician performing the procedure, the type of catheter used, the catheter insertion site, the position of the catheter tip, catheter manipulation and the duration of the catheterization procedure. As the most common complication, 89% of respondents cited cannulation failure and 79% cited catheter misplacement. Improper placement of the catheter tip is a complication that can result in very serious complications, with death of the patient combined. The misalignment rate in recent tests was 56%.

Conclusions:

After analysing the results, it should be concluded that

- Analysis of the collected complications during and after the insertion of intravenous accesses in newborns far exceeds the data from the world literature - as many as 61% necrosis of the insertion site area, the same number of reported extravasation of IV fluid outside the vein, a high percentage of infections related to the maintenance of the vascular catheter.
- I found that some nurses and midwives declare the need to routinely perform insertion on every patient, keeping insertion monitoring charts is not standard in neonatal units. The child's distress during the infusion does not signal to all employees to urgently check the patency and area of the IV access.

- I see the reason for this state of affairs in the lack of uniform standards for both insertion, care and rules for removal of insertions. What seems particularly worrisome is that even when respondents declared the existence of a procedure related to vascular cannulation at a given facility, the use of such procedures was not required (large differences in the responses of individual respondents) or they are not updated to the latest medical knowledge (e.g., strictly defined time for removal of the insertion from the moment of cannulation).
- The techniques and pathophysiology of intravenous access should be given much more attention in the didactic process. Special attention should be drawn to possible complications and their causes, the importance of equal management by all members of the team, and careful observation of the patient's condition and prompt response to emerging changes.
- Continuous training and improvement of skills while working in the department is necessary, as well as the use of existing standards; it seems important to standardize and introduce standards adapted to the recommendations of international organizations, such as the CDC or the American Academy of Pediatrics.