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The factors associated with bloodstream infection in home parenteral nutrition with central venous catheter

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Home Parenteral Nutrition (HPN) is a widely choice of care which used to support nutrition or correct malnutrition in patients with long-term of gastrointestinal tract failure. Despite central venous access (CVA) is recommend for HPN to improve patients' quality of life but it leads to bloodstream infection that a major complication of its. This has a potential for significance morbidity and mortality increasing. Many risk factors for the development of infection have been suggested such as patient factors, characteristics of the infusion device, catheter care, etc. Then the purpose of this study is to determine the factors associated bloodstream infection in HPN with central venous catheter included, patient charateristics, HPN infusion frequency, type of disinfectant, type of central venous catheter (CVC), type of catheter exit site care and frequency of care. This study was a retrospective study of 72 purposive samples who met the criteria including were surgical and medical patients who received HPN in service of Home Health care unit, Ramathibodi Hospital, Mahidol university, Thailand since October 2002 to April 2014. Follow a clinical practice guideline for HPN patients in Ramathibodi hospital, the patients could self-cared or were cared by their family member in their own home who were taught by nutrition home health care nurses specialist in hospital to manage the CVC and HPN, included CVC, HPN information, knowledge and skill to prepare HPN and CVC care with aseptic technique, and provide advice about the home infusion pump. Discharge to their home is achieved after demonstrated competency in management of CVC and HPN and were visited by the nurses in their home. The result showed that overall, 39 patients were female (54.2%). Age range of them was 16 to 77 years (mean = 56.2 years: SD =15.7) and nearly 72% was patients with cancer disease who received chemotherapy (22.2%), or/and radiotherapy (5.6%), and the majority of patient's functional status in ADLs was partially dependent in self-care (58.3 %). A total of 99 CVCs were placed (median, 2 per patient; range, 1-7), the CVC type was quite similar in Tunneled catheter or Implantable port (45.5% vs 44.4%) and number of CVC removal range was 0 to 6 per patient, nearly 80% of all patients never remove it all along HPN duration (79.2%). Main reason of CVC removal was CVC infection (57.1%). Total catheter years were 14230, median CVC dwell time was 130 days (range, 7 - 1283). Moreover, the tendency was to use the CVC for HPN everyday (98.6%), mainly in the daily HPN infusion duration was under 24 hours/day (56.9%), 16 hours/night was great (33.2%). More half of them had the catheter exit site care frequency once a week (58.4%), the most of them used 2 % Chlorhexidine in 70% alcohol or 70% Alcohol for catheter site care (91.7%) and used the usual sterile dry gauze was similar to the antimicrobial transparent dressing (55.6 % vs 44.4%). The median of HPN stay was 6.5 months (range 8 days to 8.5 years), and the major reason of HPN termination was a patient deceased with underlying disease cause (74.6%). The following of CRBSI rate is showed that sixty two (86.2%) experienced no CRBSIs. Overall 69 paired blood cultures from 72 patients showed that 21 CVC-related infections occurred in 10 patients corresponding to 13.8 % of the whole patients. The frequency of CVC- related infections range in CVC- related infections patients was 1 to 6 times, more than half had a single infection (60%), the median number of infections was 2 per patient. The incidence of CRBSIs was 1.47 per 1,000 catheter days, respectively (21 infections over 14230 catheter days). With respect to microbiology, found the 26 pathogens isolated in the 69 total paired blood stream infections which were caused by gram-negative bacteria (38.5%) and coagulase-negative staphylococci (26.9%). In a univeriate analysis for CRBSI frequency was greater in patients with independent functional status in ADLs (P=.001): 38.1% had at least 1 infection and received daily HPN infusion duration < 24 hours/day: (P=.04): 22% had at least 1 infection, although underlying disease, type of treatment, HPN infusion frequency, type of disinfectant, type of central venous catheter, type of catheter exit site care and frequency of catheter exit site care were no longer a significant risk factor. In conclusion, no different in risk factor with Tunneled catheter or Implantable port, suggesting HPN protocol with tunneled catheter was easier cared by their family member and decrease in home visit frequency. Further study is recommended to analyze the multidimensional factors related to risk factor in order to develop continuing quality improvement to prevent bloodstream infection in HPN with central venous catheter.

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