Introduction and Objective:

Pneumothorax is more frequent in the neonatal period especially among premature infants. Pigtail catheter drains have been shown to be as effective as and less invasive in adults than traditional chest tube thoracostomy, but there are limit data regarding premature infants. We aimed to compare the efficacy, safety and complication associated with placement of large-bore chest tube versus pigtail catheter in premature infants with pneumothoraces.

Method and materials

We retrospectively reviewed the medical records of premature infants with pneumothoraces seen in the neonatal intensive care unit of a single medical center over a 11-year period who received treatment with either a large-bore chest tube or a pigtail catheter. We excluded patients who had received thoracostomy tube due to diseases other than pneumothoraces (eg. Hemothorax, parapneumonic effusion, empyema and chylothorax) and patient with post-operative thoracostomy tube insertions. Vital sign changes before and after the procedures were recorded in both groups. Medical records, such as age, sex, clinical presentation, procedure time, subsequent therapies, hospital days to discharge, and complications, were collected and compared between these two methods of intervention.

Results

Eighty-six chest thoracostomy were inserted in 58 premature infants including 60 pigtail catheters and 26 traditional chest tubes. When comparing patients with pigtail catheter and traditional chest tube inserted for pneumothoraces, the success rate, demographics, tube days, length of hospital stay, days for mechanical ventilation, and insertion-related complications were not significantly difference between two groups. In both groups, we observed reduced FIo2 level after the procedure (P<0.0001); and subsequently increased SaO2 value (P=0.001), were both statistically significant within group but no difference between two groups. We also found significantly increased heart rate after procedure over pigtail catheter group (P=0.016); but when preformed group statistics for difference in heart rate changes were not statistically significant (p=0.756). Premature infants with pigtail catheters required less procedure times than those who had traditional chest tube (25.31 min for traditional chest tube vs 14.92 min for pigtail catheter, P <0.001). Premature infants with pigtail catheter were more prone to developed tube dislocation or kinking than those who had traditional chest tubes, but the difference was not statistically significant.

Conclusions

Pigtail catheter offers a safe and effective alternative to traditional chest tubes for premature infants receiving treatment for pneumothoraces in the neonatal intensive care unit. This is an easy and quick bedside procedure and is particularly useful for premature infants that require immediate air drainage.

References