INTRODUCTION

- Treating dyspnea in terminally ill pediatric cancer patients poses a special challenge to medical care providers who comfort these young patients.

- Dyspnea, often referred to as “air hunger,” is a common refractory symptom associated with end-stage cancer. In fact, the incidence of dyspnea in terminal cancer patients in last 6 weeks of life is greater than 70% (1). We present 2 cases in which continuous drip of midazolam was used to alleviate dyspnea at end-of-life.

CASE REPORTS

CASE 1:

- A 5 year 7 month-old girl (18.5kg/BSA0.69) with stage IV metastatic rhabdomyosarcoma and leptomeningeal disease was in hospice care at home and was admitted to the hospital for pain management.

- On admission she had bilateral pulmonary lower lobe atelectasis secondary to metastatic tumor obstruction. On examination she had mild suprasternal and intercostal retractions, generalized rales, and diminished breath sounds in both lower lung fields.

- Her medications included an albuterol inhaler 4 times a day, fluticasone inhaler twice a day, gabapentin 75mg 3 times a day, and lorazepam 2 mg intravenously as needed for anxiety every 2 hours.

- For her pain management she was started on intravenous (IV) patient controlled analgesia (PCA) with morphine at 0.5 mg/hour basal infusion and boluses of 0.5mg, and a lockout interval 10 minutes.

- After 5 days she developed worsening dyspnea and began 2 liters/minute of nasal cannula oxygen. Her dyspnea was temporarily relieved with IV lorazepam and 25 micrograms of fentanyl given by inhalation nebulizer every 2 hours, but dyspnea returned before the next treatments.

- The family’s concern prompted consultation with the pediatric pain service, and subsequently a midazolam drip was started at 0.5mg per hour. After starting the midazolam drip, the patient became comfortable and symptoms of air hunger dissipated. Fentanyl updraf and lorazepam IV were continued at their scheduled intervals with midazolam drip.

- The patient died peacefully 13 hours later surrounded by her family members secondary to cardio pulmonary arrest.

REFERENCES

3. Cherry N. Palliative sedation for the relief of refractory physical symptoms. Progress In Palliative Care 2008;16:31-42

CASE 2:

- An 8 year-old female (21kg/BSA0.91) with multifocal osteosarcoma was admitted to hospital with difficulty breathing.

- Her mother reported that the child had rapid and “heavy” breathing with periodic gasping. A moderate right-sided pleural effusion was apparent on chest roentgenogram.

- During this hospitalization, she was placed in comfort care, continuing methadone 5mg orally twice a day but supplemented with a hydromorphone IV PCA at 0.2 mg/hour hourly basal infusion, boluses of 0.2 mg, and a lockout interval of 8 minutes.

- Diazepam 2mg IV every 4hours was also started for anxiety. Over next two days, her dyspnea worsened, and 25 micrograms of fentanyl given by inhalation nebulizer every 2 hours was added which gave periodic relief.

- Six hours later pain service was consulted and a midazolam drip IV at 0.5mg per hour was begun. Ten hours later, the patient passed away peacefully secondary to cardio pulmonary arrest with her family at bedside.

DISCUSSION

- At the end-of-life, the goals of care shift such that the relief of suffering predominates. Once all other therapeutic alternatives have been considered and found to be ineffective or inapplicable for comfort care, sedation may be indicated for control of specific symptoms.

- Palliative sedation, when appropriately indicated and correctly applied to relieve unbearable suffering does not seem to have any detrimental effect on survival of patients with terminal cancer (2). The literature describing the use of sedation in management of refractory symptoms at the end-of-life is anecdotal and refers to the use of opioids, neuroleptics, benzodiazepines, barbiturates, and propofol.

- The most common refractory symptoms requiring sedation are delirium and dyspnea (2). These symptoms are frequently present at the end of life, and are prognostic for death in a short time. The most commonly used sedative drug reported during end-of-life in the adult literature is midazolam, a benzodiazepine with relatively short half-life (3). Its shorter half-life allows it to be easily administered via a continuous infusion with relatively rapid titration effects.

- The starting dose of the midazolam infusion for both of our patients was 0.5mg/hour or approximately 25 micrograms/kilogram/hour. Frequent re-assessment of the patient’s condition is essential in order maintain alleviation of dyspnea.

- In conclusion, refractory dyspnea may be alleviated with continuous IV midazolam in pediatric patients during end of life care. This treatment option should be made available to pediatric patients as part of a comprehensive plan to alleviate suffering during end of life care.

ALLEVIAION of DYSPNEA in TERMINAL PEDIATRIC CANCER PATIENTS

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