INTRODUCTION

This is a retrospective analysis of anesthetic procedures for radiotherapy in children emphasizing the use of oxygen/sevoflurane in inducing and maintaining anesthesia with no need of peripheral or central intravenous access.

METHODS AND MATERIALS

Fifty-three medical charts of children who were submitted to radiotherapy under general anesthesia (from January 2001 to July 2006) were analysed, for a total of 1048 anesthetic procedures. All the children were monitored with pulse oximetry, heart rate, capnography, one-lead electrocardiography, and given sevoflurane by inhalation. The airway was provided by guedel canulae and face mask or binausal canulae and, therefore, for planning and simulation process; intravenous access was provided. For daily treatment, however, no intravenous procedure was needed most of the time. We report the main types of tumors and the average age and anesthetic group of patients. The results were analysed in terms of treatment interruption, complications and time on the machine.

RESULTS

The studied group included children from eight months to six years of age, with the following physical condition: ASA II (45), III (7) and IV (1) and tumours of CNS (12), retinoblastomas (19), leukemia (6), rhabdomyosarcomas (5), Wilm’s tumours (5) and others (6). The children were submitted to anesthesia on a daily basis. Forty-eight of them were given sevoflurane by inhalation and five were treated by a balanced anesthesia with sevoflurane and propofol. Jaw relaxation was complete and vital signs stable in all children. The average treatment time was 15 minutes, increased by the application time and phase I recovery (10 minutes) in the treatment room. The post anesthetic recovery was completed on ward. The expended time of linear accelerator was 25–30 minutes to perform all the procedure. Thirty-seven children were treated for >4 weeks and 16 children for <4 weeks. In 40 out of 53 cases (75.5 %) there were no interruptions in the course of treatment, in 11 cases (20.5%) there was an average interruption of two days, and two children stopped the treatment due to progression of the primary disease. Main reasons for the interruptions were leukopenia, vomiting pneumonia and diarrhea.

DISCUSSION

In most reports of the use of anesthesia in children treated with radiotherapy we find reports of general anesthesia using intravenous propofol [1]. With a central venous line it is proven to be a safe resulting in a low rate of complications, and is quickly removed and there is no tolerance development after continuous use. However, there are reports of a 15% risk of sepsis due to catheter infection [2].

Alternatively, inhalatory anesthesia with sevoflurane alone has proved to a safe with a low complication rate to maintain anesthesia in pediatric radiotherapy. Inhalatory anesthesia with sevoflurane is ideal for radiation therapy in children. The loss of consciousness is fast, supplemental use of opioids or muscle relaxants is not necessary, and the venous access may be avoided, reducing the risks of catheter infection, without compromising safe treatment. Furthermore, the procedure is well tolerated, indicated by high hemodynamic stability, a reduced rate of post operative restlessness, shivering, nausea and vomiting resulting in a low incidence of interruption during radiation treatment.

CONCLUSION

Our institucional experience confirms the safety of the use of inhalatory anesthesia for pediatric radiotherapy, with low rates of complications and short brief of the occupation of the machine.

REFERENCES