

Clinical Investigation

Reducing Anesthesia and Health Care Cost Through Utilization of Child Life Specialists in Pediatric Radiation Oncology



Michael T. Scott, MD, MBA,^{*,†} Kimberly E. Todd, CCLS,[†]
Heather Oakley, LCSW,[†] Julie A. Bradley, MD,[†] Ronny L. Rotondo, MD,[†]
Christopher G. Morris, MS,[†] Stuart Klein, MBA,[†]
Nancy P. Mendenhall, MD,[†] and Daniel J. Indelicato, MD[†]

**Department of Radiation Oncology, University of Miami Sylvester Comprehensive Cancer Center and Jackson Memorial Hospital, Miami, Florida; and [†]Department of Radiation Oncology, University of Florida College of Medicine, Jacksonville, Florida*

Received Sep 21, 2015, and in revised form May 25, 2016. Accepted for publication Jun 1, 2016.

Summary

For young children treated with radiation therapy, daily anesthesia required for immobilization increases the cost of treatment and adds potential long-term morbidity. Through education and therapeutic play interventions, a certified child life specialist (CCLS) reduces the need for daily anesthesia, particularly in children aged 3 to 8 years. The CCLS intervention results in significant health care cost savings to the payer and eliminates unnecessary

Purpose: To analyze the effectiveness of a certified child life specialist (CCLS) in reducing the frequency of daily anesthesia at our institution, and to quantify the potential health care payer cost savings of CCLS utilization in the United States.

Methods and Materials: From 2006 to 2014, 738 children (aged ≤ 21 years) were treated with radiation therapy at our institution. We retrospectively analyzed the frequency of daily anesthesia before and after hiring a CCLS in 2011 after excluding patients aged 0 to 2 and >12 years. In the analyzed cohort of 425 patients the median age was 7.6 years (range, 3-12.9 years). For the pre-CCLS period the overall median age was 7.5 years; for the post-CCLS period the median age was 7.7 years. An average 6-week course of pediatric anesthesia for radiation therapy costs \$50,000 in charges to the payer. The average annual cost to employ one CCLS is approximately \$50,000.

Results: Before employing a CCLS, 69 of 121 children (57%) aged 3 to 12 years required daily anesthesia, including 33 of 53 children (62.3%) aged 5 to 8 years. After employing a CCLS, 124 of 304 children (40.8%) aged 3 to 12 years required daily anesthesia, including only 34 of 118 children (28.8%) aged 5 to 8 years ($P < .0001$). With a $>16\%$ absolute reduction in anesthesia use after employment of a CCLS, the health care payer cost savings was approaching \$50,000 per 6 children aged 3 to 12 years treated annually with radiation therapy in our institution. This reduction

Reprint requests to: Daniel J. Indelicato, MD, Department of Radiation Oncology, University of Florida College of Medicine, 2015 North Jefferson St, Jacksonville, FL 32206. Tel: (904) 588-1800; E-mail: dindelicato@floridaproton.org

Conflict of interest: none.

Acknowledgment—The authors thank the staff of the Research Office of the University of Florida Department of Radiation Oncology for helping prepare the manuscript.

potential risks from weeks of daily anesthesia.

resulted in a total of only 6 children aged 3 to 12 years required anesthesia to be treated per year at our center to achieve nearly break-even cost savings to the health care payer if the payer were to subsidize the employment expense of a CCLS. Overall, the CCLS intervention can provide an average annualized health care payer cost savings of “ $[(\text{anesthesia cost to payer during radiation therapy course}/6) - (\text{CCLS expense to payer}/N)]$ ” per child (N) treated with radiation therapy, where N equals the number of children aged 3 to 12 years treated in 1 year. This formula assumes that the payer subsidizes the cost for the employment of a CCLS, although our institution absorbed this expense for this data cohort. The predicted annualized health care system cost savings from reducing the frequency of anesthesia with radiation therapy when treating 100 children aged 3 to 12 years per year could exceed \$775,000.

Conclusions: These data suggest that a CCLS significantly reduces the frequency of daily anesthesia for children treated with radiation therapy. Health care system payers may achieve significant cost savings by financially supporting the employment of a CCLS in high-volume pediatric radiation therapy centers. © 2016 Elsevier Inc. All rights reserved.

Introduction

For children receiving a course of radiation therapy, both effective and reproducible daily immobilization techniques are essential for optimal tumor targeting and normal-organ avoidance. Although recent technological advancements in radiation therapy delivery, such as proton therapy, have increased the therapeutic ratio by greatly reducing the dose to normal tissues (1), adequate patient immobilization on a daily basis is required to achieve optimal results. Yet many young children experience severe anxiety and distress not only when encountering an unfamiliar medical environment (1, 2) but also when immobilized with thermoplastic molds, such as those used in the treatment of central nervous system and skull base tumors. In such cases anesthesia is commonly used to ensure daily immobilization for pediatric radiation therapy. Although the use of daily anesthesia is highly effective to this end, daily anesthesia exposes children to rare but serious acute risks and potentially detrimental long-term side effects (3). In the acute setting, especially, fasting for anesthesia can be challenging for parents and detrimental in children with compromised nutritional status (4). Additionally, daily anesthesia limits scheduling flexibility in radiation oncology clinics and increases the cost of treatment to the health care payers. Through education and therapeutic play interventions, a certified child life specialist (CCLS) may reduce the need for daily anesthesia and thus potentially reduce cost and toxicity associated with pediatric radiation therapy.

Certified child life specialists are trained professionals with expertise in helping children and their families overcome a wide range of challenging experiences, particularly those related to health care and hospitalization. They promote effective coping through play, preparation, education, and self-expression activities (5). We sought to analyze the effectiveness of a CCLS in reducing the frequency of daily anesthesia at our institution, and to quantify the potential

health care payer cost savings of CCLS utilization in the United States.

Methods and Materials

Patient and treatment characteristics

Deidentified pediatric patient data, including patient age and requirement of daily anesthesia, were retrospectively collected under an institutional review board–approved protocol. In this protocol, individual patient data were restricted such that histologic tumor type and treatment site were not available for analysis. Patients were categorized as requiring daily anesthesia if anesthesia was used for immobilization during any single day throughout an entire radiation treatment course. Our anesthesia team’s approach used both inhalational and intravenous anesthetic agents under the direction of a subspecialized anesthesiologist, followed by patient recovery in a radiation oncology–specific nursing unit on site. We identified 738 children (aged ≤ 21 years) who received radiation therapy at our institution from 2006 to 2014. All children were treated with proton radiation therapy; none received total body irradiation as part of a bone marrow preparatory regimen. Most of these children were treated to radiation therapy doses between 50.4 and 59.4 GyE with once-daily fraction sizes of 1.8 GyE. For further data analysis, we excluded patients aged 0 to 2 and >12 years ($n=313$) because all patients aged 0 to 2 years required anesthesia, and none of our patients aged >12 years required anesthesia. In the analyzed cohort of 425 patients the median age was 7.6 years (range, 3–12.9 years), and the mean age was 8.5 years. For this study, we retrospectively analyzed the frequency of daily anesthesia before and after employing a CCLS in 2011. For the pre-CCLS period, the overall median age was 7.5 years

Download English Version:

<https://daneshyari.com/en/article/8213739>

Download Persian Version:

<https://daneshyari.com/article/8213739>

[Daneshyari.com](https://daneshyari.com)