Cureus

Daily accelerated partial breast irradiation (APBI) using external beam radiotherapy (EBRT). Is it safe?

Open Access
Abstract
Published 03/30/2024

Mohammed Mohammed [1], Baher Elgohari [2], Mohamed Abdelhakiem [2], Hong Wang [3], Caroline J. Leyding [4], Parul Barry [2]

1. Radiation Oncology, UPMC Hillman Cancer Institute, Pittsburgh, USA 2. Radiation Oncology, University of Pittsburgh Medical Center, Pittsburgh, USA 3. Biostatistics, Univeristy of Pittsburgh Medical Center, Hillman Cancer Center, Pittsburgh, USA 4. Biostatistics, University of Pittsburgh, Pittsburgh, USA

Corresponding author: Mohammed Mohammed, mohammedm3@upmc.edu

Categories: Radiation Oncology
Keywords: apbi, partial breast irradiation

How to cite this abstract
Mohammed M, Elgohari B, Abdelhakiem M, et al. (March 30, 2024) Daily accelerated partial breast irradiation (APBI) using external beam radiotherapy (EBRT). Is it safe? . Cureus 16(3): a1228

Abstract

Purpose:Accelerated partial breast irradiation (APBI) is routinely delivered for early-stage breast cancer. Current guidelines recommend treatment with 30 Gy in 5 fractions every other day (QOD) using external beam radiotherapy (EBRT). APBI provides similar oncologic outcomes as adjuvant whole breast (WBI), with otherwise better cosmetic outcomes, and is delivered over a shorter duration. Limited data exists for tolerability of daily (QD) APBI.

Methods and Materials:We analyzed the data from patients treated at our institution with APBI using EBRT who have recorded follow-up visits. Institutional practice pathways recommend target volume delineation of 1.5 cm on the lumpectomy cavity (CTV) and 0.5 cm expansion (PTV) with IMRT planning. We compared the difference between daily and non-daily treatment groups in frequency of early and late side effects including skin toxicity, fatigue, and pain using Fisher's exact test for APBI delivered either QOD or QD. High grade was defined as grade 3 or higher CTCAE version 5.0 toxicity.

Results:176 patients were included in our analysis; the median age was 65 years; 118 patients received non-daily treatment; 58 patients received daily treatment, and 2 patients had bilateral breast tumors. There was only one grade 2 event (grade 2 fatigue in the daily treatment group). There was no recorded skin toxicity higher than grade 1 skin toxicity on early and late follow-up. At one-month post-treatment, the incidence of non-high grade skin toxicity was 55% (27/49) with QD treatment vs 37% (38/103) with QOD treatment (p-value=0.0372), non-high-grade fatigue was 16% (8/49) with QD vs 8% (8/103) with QOD (p-value= 0.16), non-high-grade pain was 4% (2/49) with QD treatment vs 4% (4/103) with QOD treatment (p-value= 1). At the last visit, with a median follow-up of 14 months, the incidence of non-high-grade (grade 1-2) skin toxicity was 8% (1/13) with QD treatment vs 7% (4/56) with QOD treatment (p-value=1), non-high-grade fatigue was 0% (0/13) with QD treatment vs 7% (4/56) with QOD treatment (p-value= 1), non-high-grade pain was 8% (1/13) with QD treatment vs 7% (4/56) with QOD treatment (p-value= 1).

Conclusions:Our data shows that APBI delivered once daily over the course of a week is well tolerated. Patients treated with QD APBI experienced higher grade 1 skin toxicity compared to those who received QOD treatment. There was no difference in late skin toxicity for those with whom long-term follow-up data was available. Our institutional experience with QD APBI is not only more convenient but also comparable to historical controls. Longer-term follow-up is needed.