Stereotaktická radioterapie pro komorové tachykardie vede k prodloužení délky cyklu arytmie

Peichl P, Wichterle D, Hašková J, Cvek J, Stojadinović P, Čihák R, Kautzner J

Klinika kardiologie
IKEM, Praha

INSTITUT KLINICKÉ A EXPERIMENTÁLNÍ MEDICÍNY
KLINIKA KARDIOLOGIE

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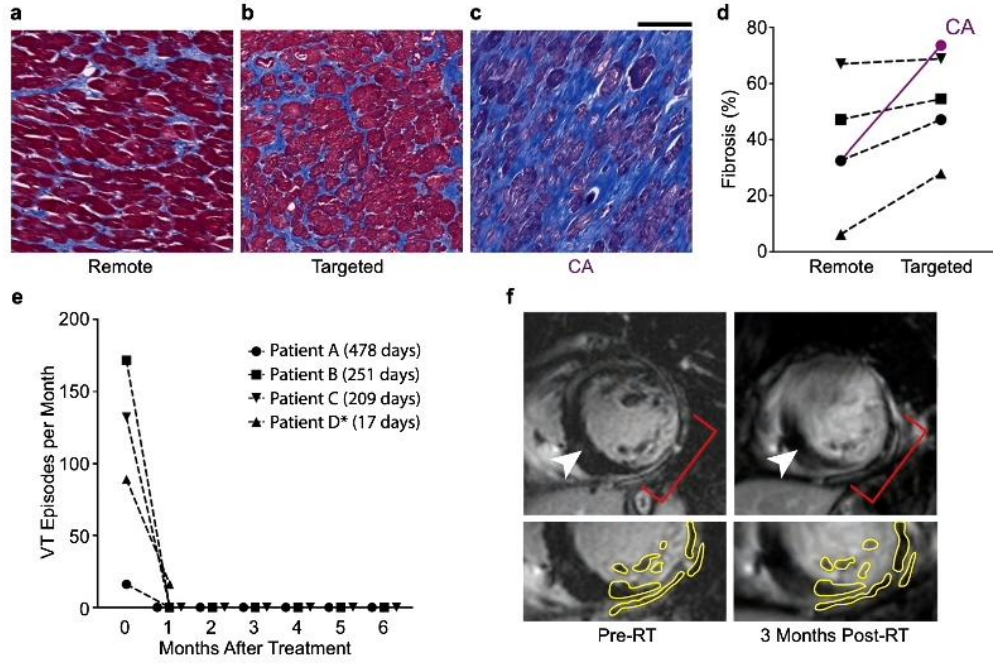
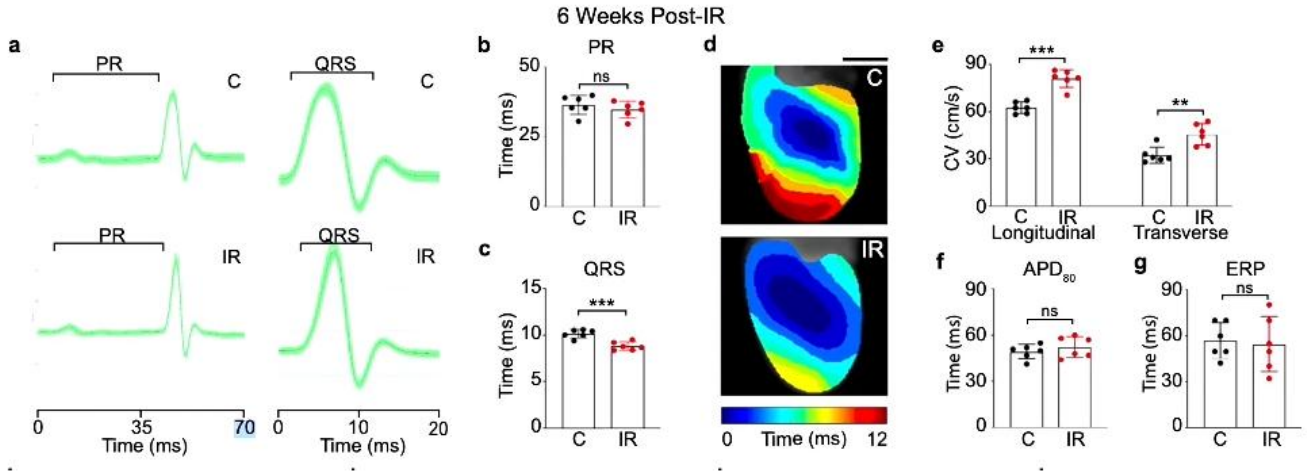
Introduction I.

- Stereotactic body radiotherapy (SBRT) is a novel treatment for otherwise resistant ventricular tachycardias (VTs).



Fibrosis cannot account for timing of the effect?

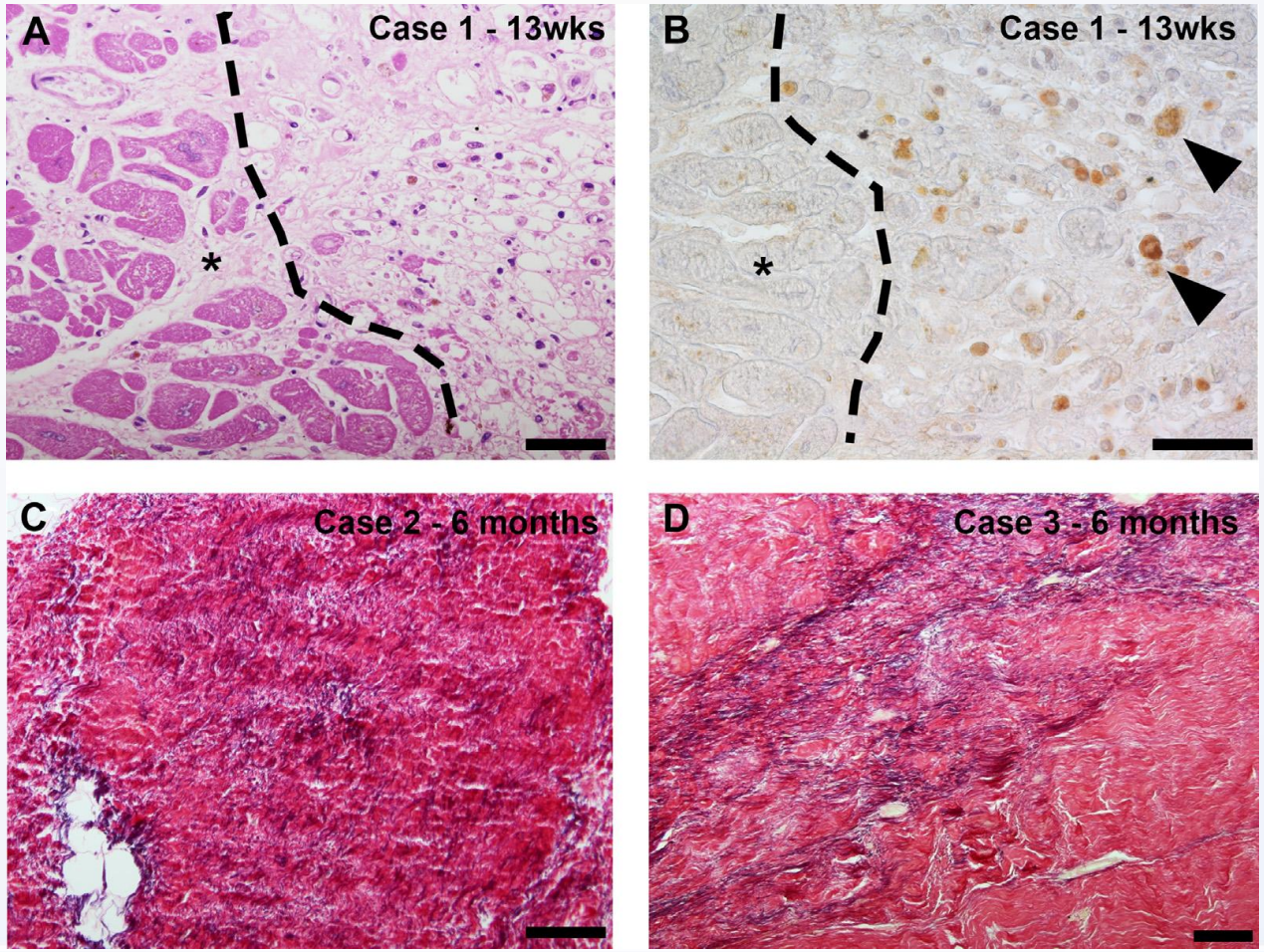


SBRT increases CV conduction in murine model.
(increase in NaV1.5 and Cx43)

Zhang et al. Nature Communications 2021

Introduction II.

- Histopathology changes after SBRT
  - Case series of 3 pts with postmortem immunohistochemical analysis of morphologic changes in the myocardium 3,6,9 months after SBRT.
  - Observed changes were compatible with early apoptosis with subsequent fibrosis.



Kautzner J, JACC EP 2021 Dec;7(12):1487-1492.

Purpose

- The study compared the morphologies and cycle lengths (CLs) of inducible VTs during re-do catheter ablation after SBRT with VTs before SBRT.

Methods

- We investigated patients that underwent SBRT (a single session of 25 Gy) for refractory VT and subsequent electrophysiology study / reablation for recurrences of VTs. All inducible VTs were analyzed concerning morphology, CL and location with respect to the irradiated region.

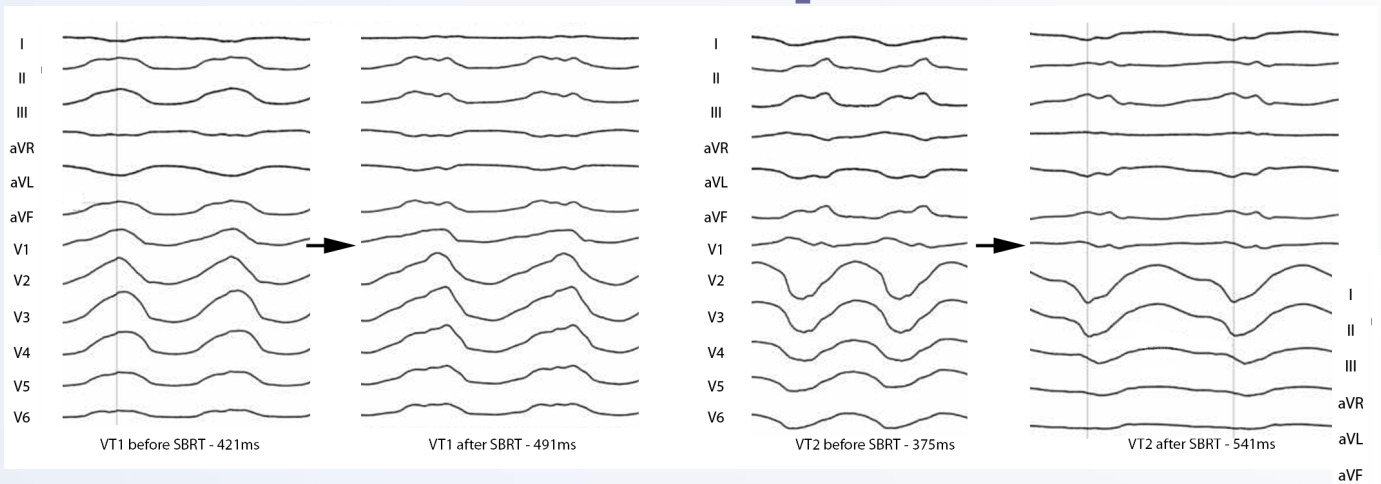
Patient population

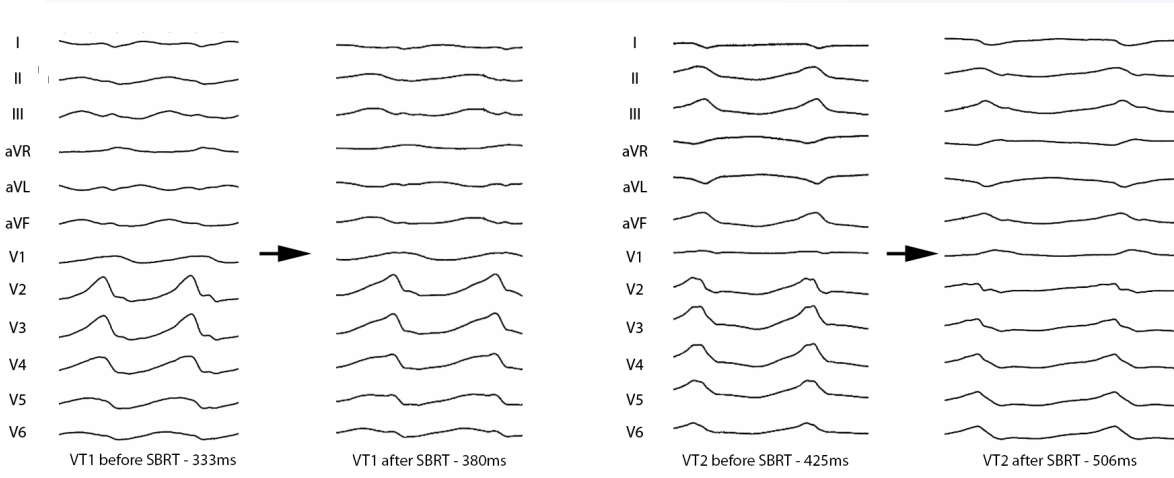
- **A total of 9 patients (41% of pts treated in our center)** had an EP procedure prior and after SBRT and were analyzed.
  - 2 women, aged 60 ± 13 years
  - A time period 2017-2022
  - Two patients had CAD, six patients had NICM, and one had a cardiac fibroma.
  - All patients were on chronic amiodarone treatment.
  - The mean **LVEF was 35 ± 12%**.
  - **Prior** SBRT pts failed **2.4± 1.1 ablation** procedures including epi in 5 pts.
  - The mean **planning target volume for SBRT was 39 ± 21 ml**.

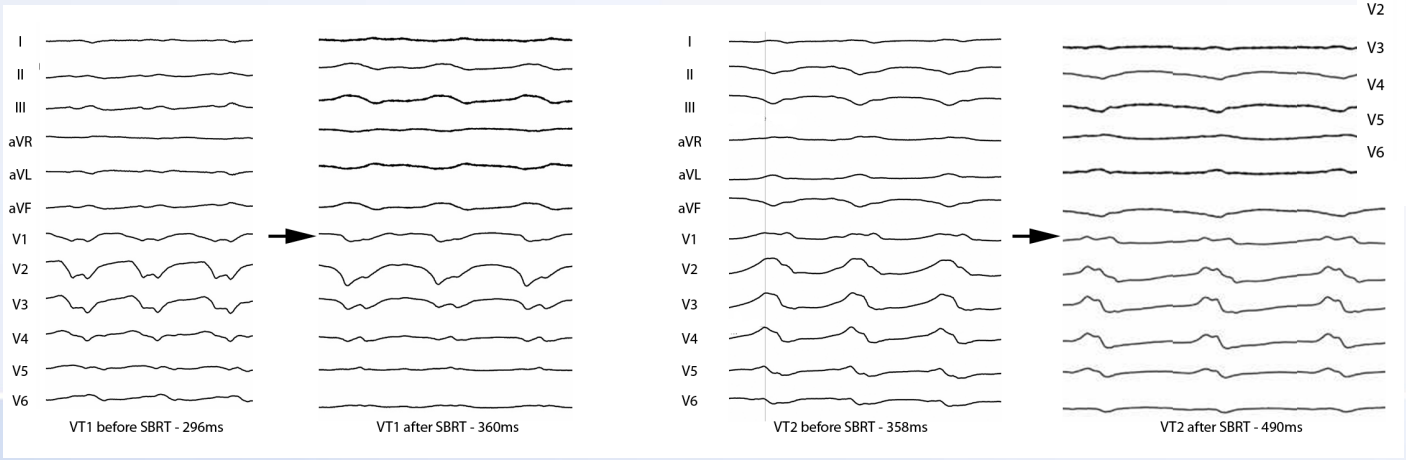
Results

- Electrophysiology study/reablation was performed at a **mean interval of 8 months** (interquartile range: 2-10months) after SBRT.
- **Amiodarone** dose did not change in-between both EP procedures.
- **A total of 23 and 27 distinct VT morphologies were inducible before and after SBRT, respectively**.
  - **Twelve pairs of VTs (44%)** were identified that had identical morphology before and after SBRT.

Examples of corresponding VT morphologies in individual patients before / after SBRT



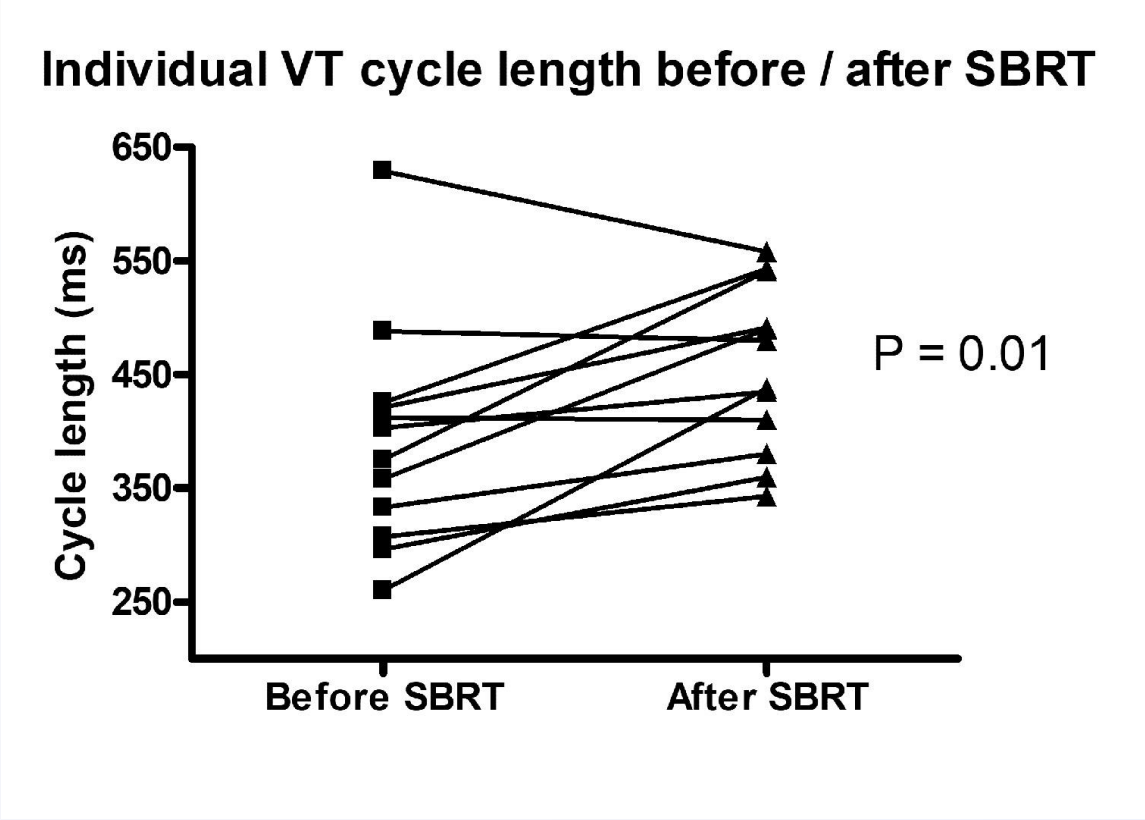




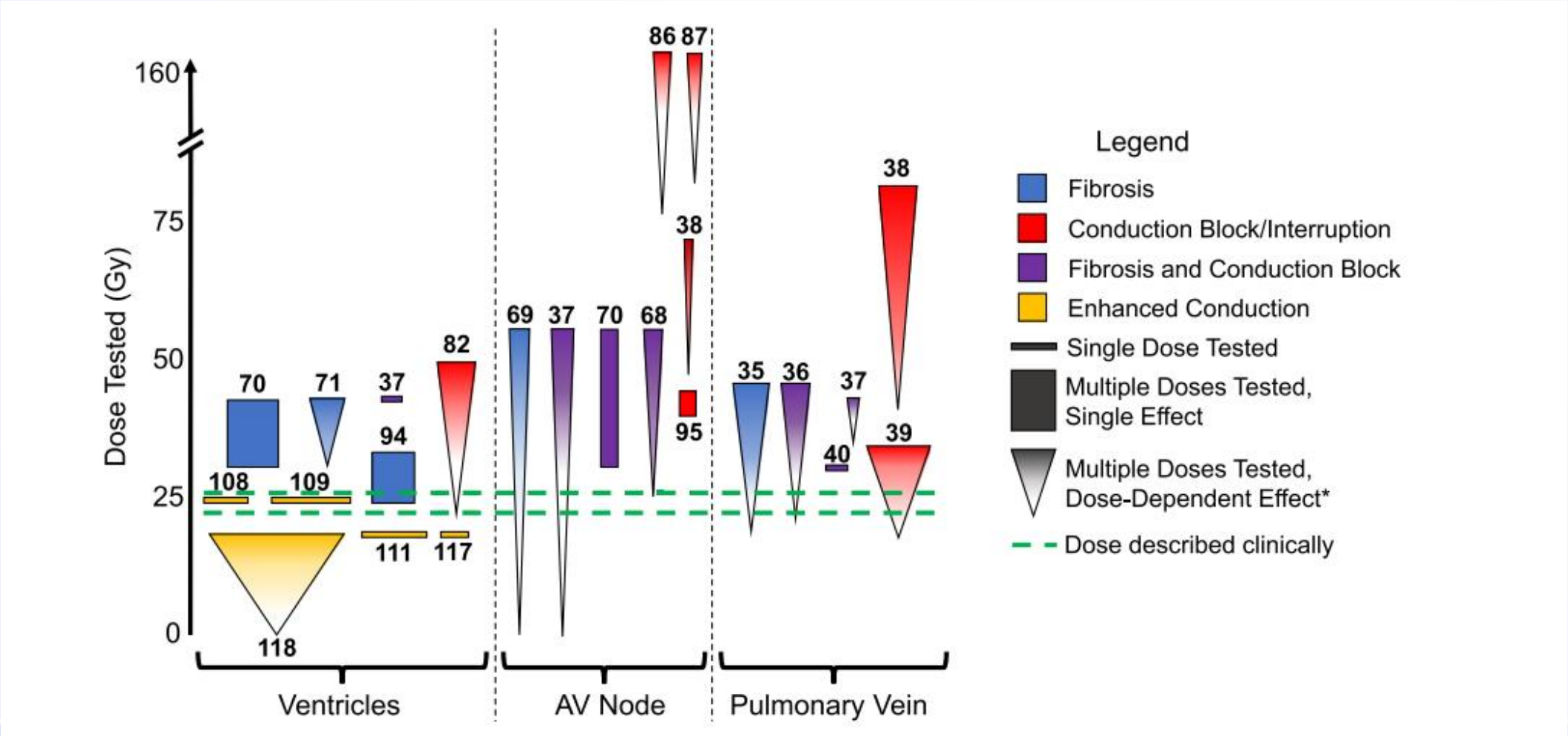
Results

- The mean CL of corresponding VT pairs decreased from 399 ± 98 ms to 472 ± 74 ms (P = 0.01) after SBRT.

- When presumed locations of the inducible VTs during the second EP study were analyzed, 15/27 (56%) of VT morphologies after SBRT originated from the irradiated region.



Discussion



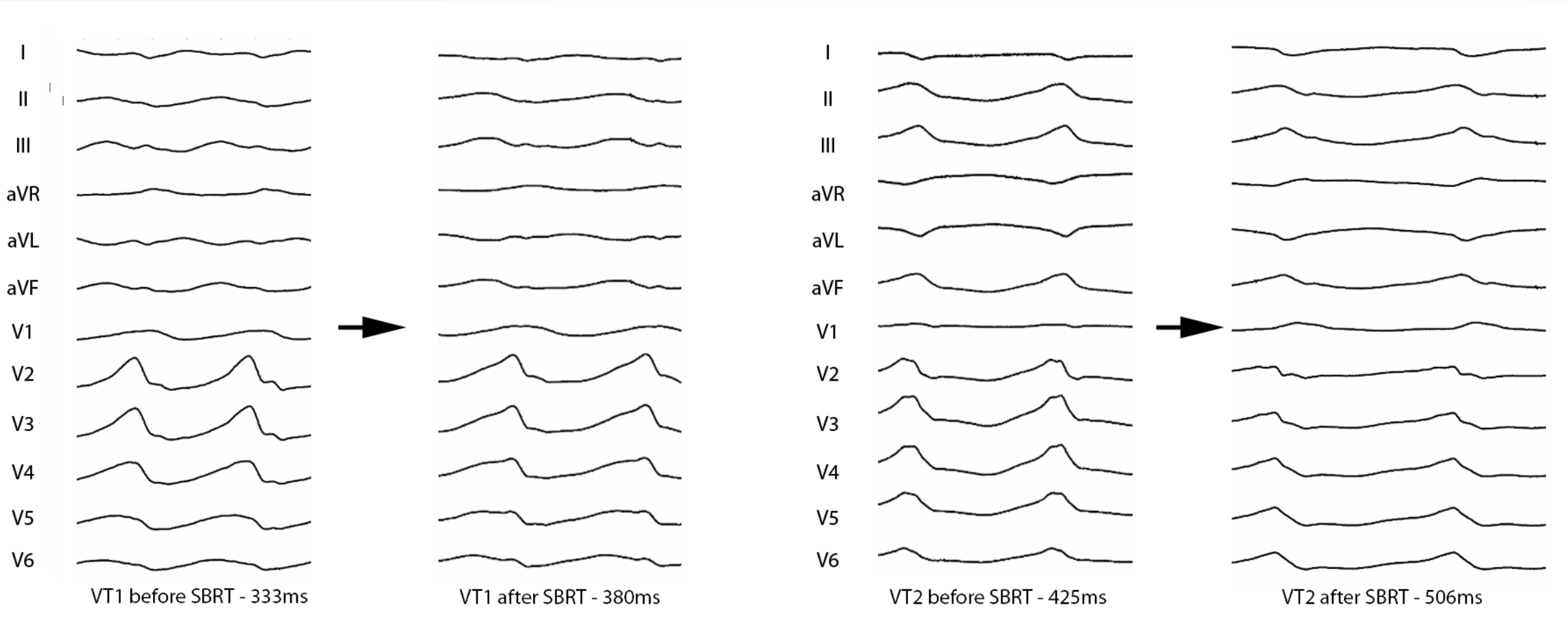
D.M. Zhang et al. / Clinical Oncology 33 (2021) 723e734

Conclusions

- Recurrent VTs after SBRT had commonly origin in the irradiated region. In pairwise comparison, the CL of VTs has prolonged after the SBRT.

- This suggests that SBRT results in radiation-induced fibrosis rather than an increase in conduction velocity.

Examples of corresponding VT morphologies in individual patients before / after SBRT



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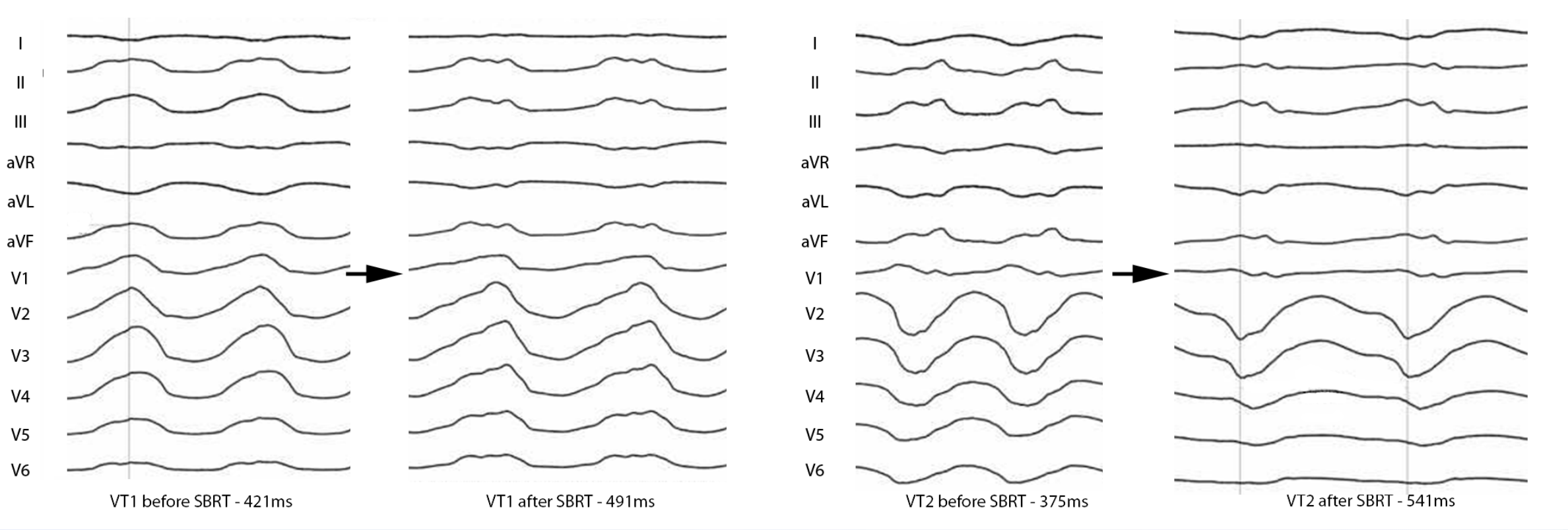

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