

## 限局性前立腺癌に対する 125I 密封小線源後の健康関連 QOL の縦断的評価と予測因子の検討 ～Prostate V100 は治療後後期の性機能低下を予測する～

### 【背景】

限局性前立腺癌に対する  $^{125}\text{I}$  密封小線源療法は、手術療法、放射線外照射療法と遜色ない、有効な治療法である。限局性前立腺癌に対する治療選択には、制癌性のみならず、治療後の健康関連 QOL (HRQOL) も重要である。現在、HRQOL の経時的変化に関連する因子は明らかではない。

### 【目的】

限局性前立腺癌に対する  $^{125}\text{I}$  密封小線源療法後の HRQOL の経時的変化と変化に関する予測因子の評価を目的とした。

### 【対象と方法】

久留米大学病院泌尿器科にて密封小線源療法を施行した限局性前立腺癌患者 180 人(単独療法群:107 例、併用療法群:73 例)を対象とした。HRQOL は、国際前立腺症状スコア (IPSS: International Prostate Symptom Score)、Medical Outcome Study 8-Items Short Form Health Survey (SF-8)、カリフォルニア大学ロサンゼルス校前立腺がん指数 (UCLA-PCI) を用いて、密封小線源療法前、治療後 1、3、6、12、18、24、36、48 カ月後に評価した。

HRQOL の経時的変化は線形混合効果モデル、Dunnett の多重比較を用いて評価した。

HRQOL の臨床的に有意な変化(臨床的に有意な変化 = 臨床的最小重要差: Baseline score の  $1/2\text{SD}$  以上の差)に関連する因子についてロジスティック回帰分析を用いて評価した。

### 【結果と考察】

UCLA-PCI の性機能スコアと SF-8 の精神的サマリースコアを除くすべての HRQOL スコアは、初期の一過性の悪化の後、ベースラインまで改善した (Figure.1-6)。

一方で性機能スコアは初期の一過性の悪化後、最終的にベースラインまで改善を認めなかった。精神サマリースコアは治療後の有意な低下は認められず、上昇傾向を示した。

多変量解析の結果、前立腺 V100(前立腺 V100: 前立腺への処方線量の 100%が照射される範囲の指標)とベースラインの性機能スコアは、治療後後期における臨床的に有意な性機能の低下を予測した。

この結果は、特に治療前に性機能が温存されている患者やそのパートナーにとって、より正確な情報を提供する一助となる。

### 【参考論文】

Ogasawara N et al. “Longitudinal Changes in Health-related Quality of Life After 125I Low-dose-rate Brachytherapy for Localized Prostate Cancer”  
Anticancer research, Vol. 40, P. 6443-6456, 2020.

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**【Figure.1 IPSS(全症例)】**

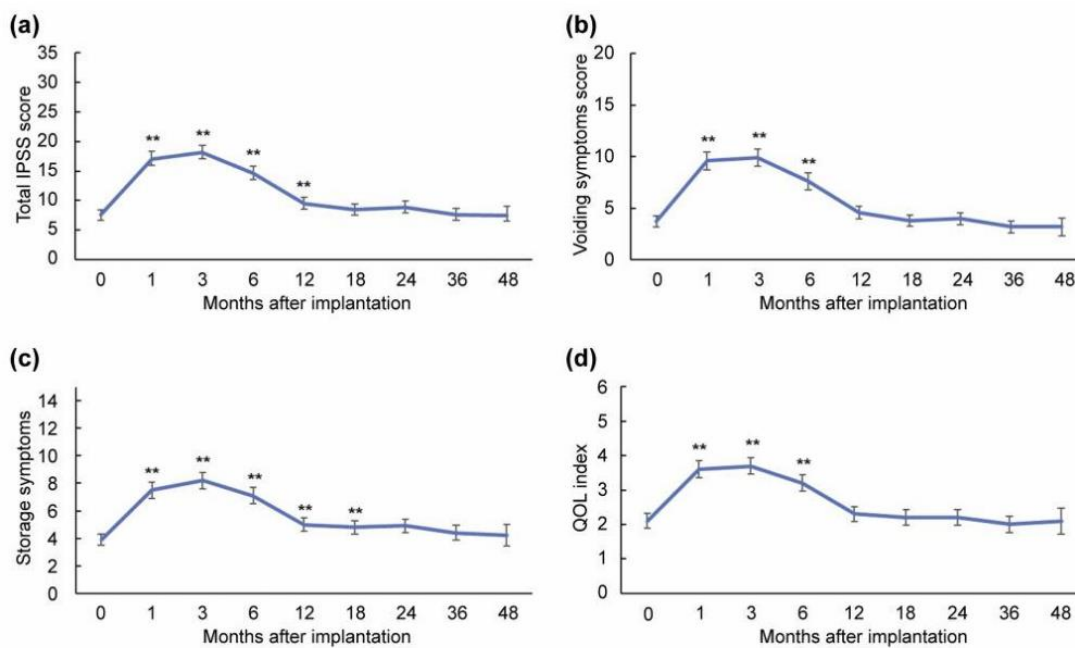


Figure 1. Longitudinal changes of Total IPSS (a), voiding symptom (b), storage symptom scores (c), and IPSS-QOL index (d) after LDB in all patients. High scores indicate better outcomes. Error bars represent 95% confidence intervals. All score: Mean score, error bars: 95% confidence intervals, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons). IPSS: International Prostate Symptom Score; QOL: quality of life; LDB:  $^{125}\text{I}$  low-dose-rate brachytherapy.

**【Figure.2 IPSS(单独療法群 vs 併用療法群)】**

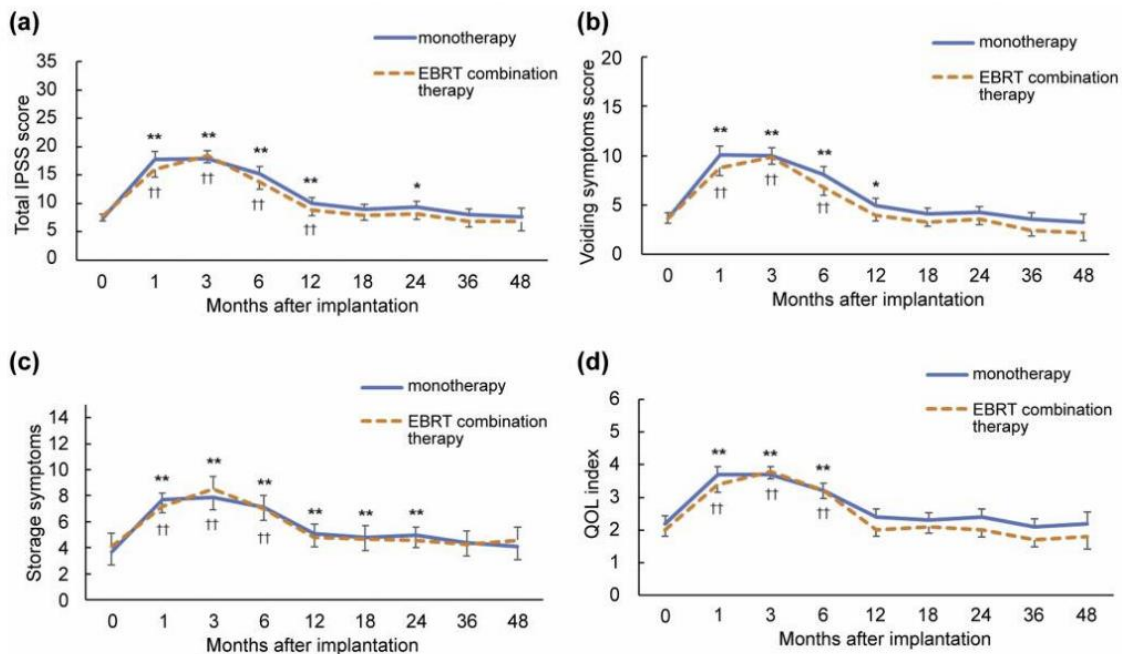


Figure 2. Longitudinal changes of Total IPSS (a), voiding symptom (b), storage symptom scores (c), and IPSS-QOL index (d) after LDB in the monotherapy group and the EBRT combination therapy group. High scores indicate better outcomes. All score: Mean score, error bars: 95% confidence intervals; confidence intervals were symmetric, but error bars are shown as one-sided to avoid overlap with mean scores. Solid line: monotherapy group, dotted line: EBRT combination group, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in monotherapy group), daggers (†):  $p < 0.05$ , double daggers (††):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in EBRT combination group). IPSS: International Prostate Symptom Score; QOL: quality of life; LDB:  $^{125}\text{I}$  low-dose-rate brachytherapy; EBRT: external beam radiotherapy.

**【Figure.3 SF-8(全症例)】**

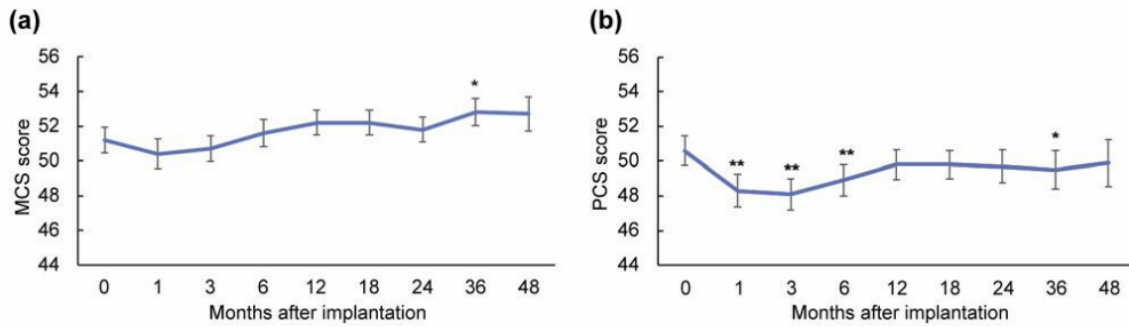


Figure 3. Longitudinal changes of SF-8 MCS (a) and PCS (b) after LDB in all patients. High scores indicate better outcomes. All score: mean score, error bars: 95% confidence intervals, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons). SF-8: Medical Outcome Study 8-Items Short Form Health Survey; MCS: mental component summary; PCS: physical component summary; LDB:  $^{125}\text{I}$  low-dose-rate brachytherapy.

**【Figure.4 SF-8(单独療法群 vs 併用療法群)】**

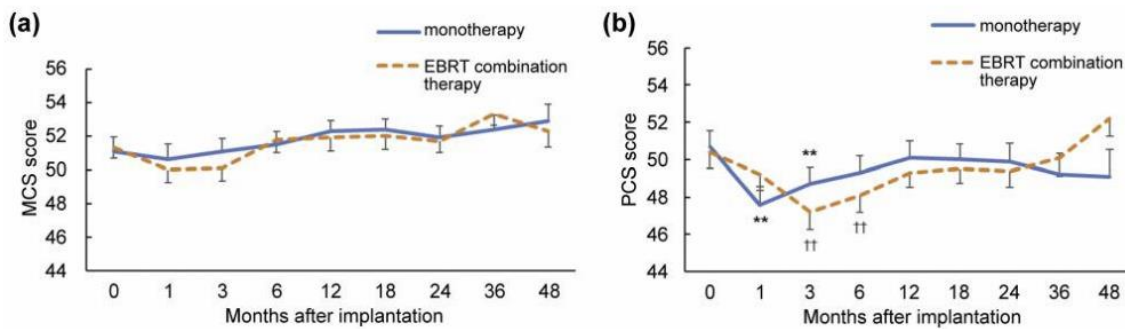


Figure 4. Longitudinal changes of SF-8 MCS (a) and PCS (b) after LDB in the monotherapy group and the EBRT combination therapy group. High scores indicate better outcomes. All score: Mean score, error bars: 95% confidence intervals; confidence intervals were symmetric, but error bars are shown as one-sided to avoid overlap with mean scores. Solid line: monotherapy group, dotted line: EBRT combination group, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in monotherapy group), daggers (†):  $p < 0.05$ , double daggers (††):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in EBRT combination group). SF-8: Medical Outcome Study 8-Items Short Form Health Survey; MCS: mental component summary; PCS: physical component summary; LDB:  $^{125}\text{I}$  low-dose-rate brachytherapy; EBRT: external beam radiotherapy.

**【Figure.5 UCLA-PCI(全症例)】**

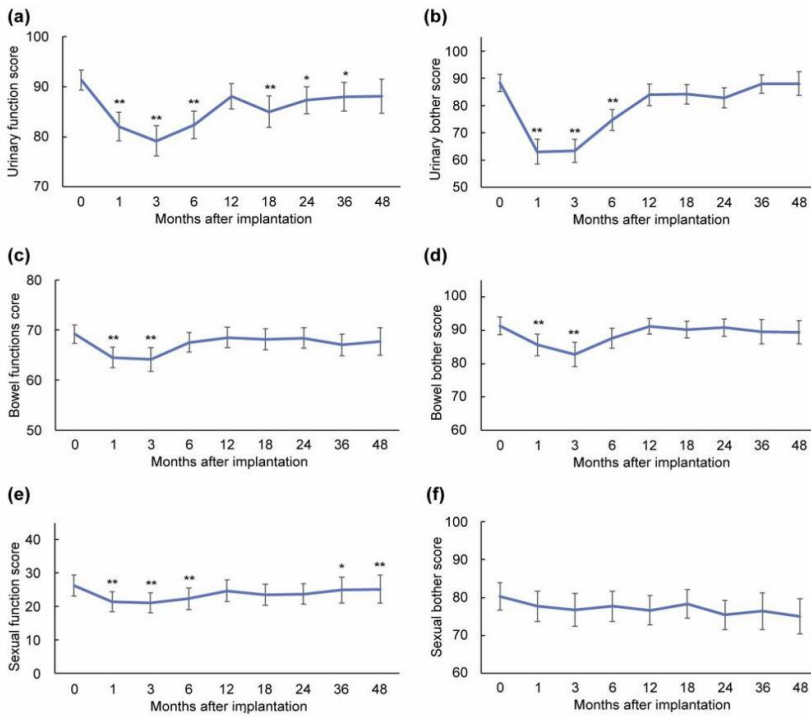


Figure 5. Longitudinal changes of UCLA-PCI urinary function(a), urinary bother (b), bowel function (c), bowel bother (d), sexual function (e), and sexual bother scores (f) after LDB in all patients. High scores indicate better outcomes. All score: Mean score, error bars: 95% confidence intervals, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons). UCLA-PCI: University of California Los Angeles Prostate Cancer Index; LDB:  $^{125}\text{I}$  low-dose-rate brachytherapy.

**【Figure.6 UCLA-PCI(单独療法群 vs 併用療法群)】**

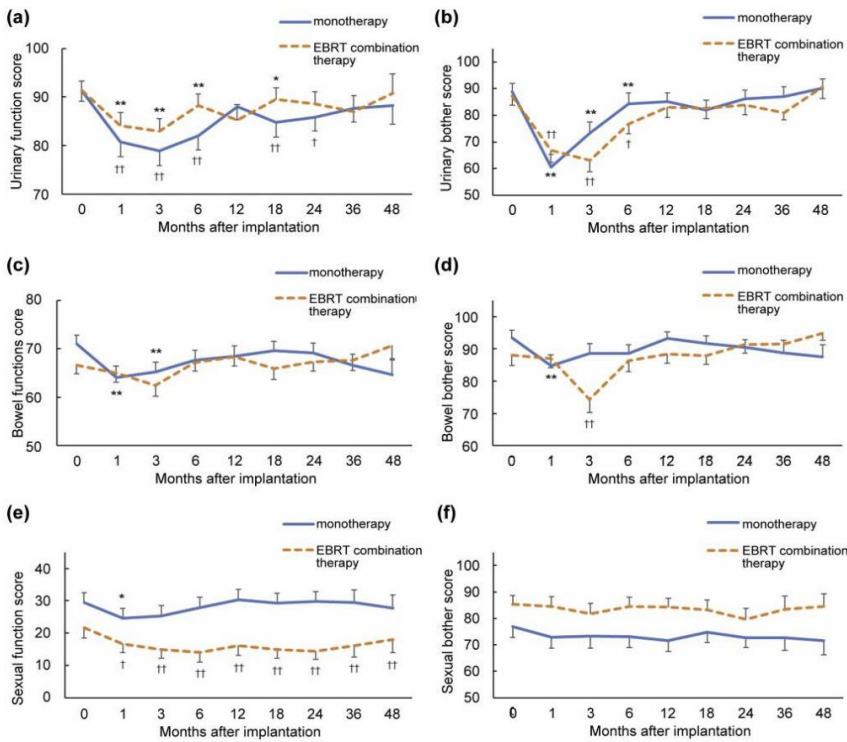


Figure 6. Longitudinal changes of UCLA-PCI urinary function(a), urinary bother (b), bowel function(c), bowel bother (d), sexual function(e), and sexual bother scores (f) after LDB in the monotherapy group and the EBRT combination therapy group. High scores indicate better outcomes. All score: Mean score, error bars: 95% confidence intervals; confidence intervals were symmetric, but error bars are shown as one-sided to avoid overlap with mean scores. Solid line: monotherapy group, dotted line: EBRT combination group, asterisks (\*):  $p < 0.05$ , double asterisks (\*\*):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in monotherapy group), daggers (†):  $p < 0.05$ , double daggers (††):  $p < 0.01$  (compared to baseline using Dunnett's multiple comparisons in EBRT combination group). UCLA-PCI: University of California Los Angeles Prostate Cancer Index; LDB:  $^{125}\text{I}$ -Low-dose-rate brachytherapy; EBRT: external beam radiotherapy.