

# 乳癌病人放射治療期間的照射劑量、症狀困擾與細胞激素之相關性探討

## Relationships among Radiotherapy Dosage, Symptom Distress, and Cytokines in Patients with Breast Cancer

### 中文摘要

本研究之研究目的在於探討乳癌婦女接受放射線治療之劑量、症狀困擾與細胞激素 IL-1、IL-6、TNF- $\alpha$  濃度的變化及相關性。採用縱貫式相關性研究設計法，以台灣版安德森症狀量表、台灣版簡明疲憊量表評估及分析乳癌婦女接受放射線治療期間多種的症狀困擾及疲憊症狀嚴重程度，以及症狀困擾對過去 24 小時日常生活的影響程度及其變化，並使用酵素免疫分析法 (ELISAs) 測量細胞激素 IL-1、IL-6、TNF- $\alpha$  的濃度變化，使用『廣義估計方程式模式』或稱為『修正模式』 (Generalized Estimating Equation model, GEE model) 的迴歸分析方法進行相關性分析，經由調整其他相關變項及重複施測的影響來矯正各變項間相依性，探討乳癌婦女放射治療六週間累積劑量、症狀困擾與細胞激素之關聯性。

以方便取樣方式，於北區二所區域教學醫院及一所醫學中心的腫瘤科門診進行收案，共收集 12 位接受放射線治療的乳癌婦女。本研究發現：

- 一、乳癌病患放射線治療期間症狀困擾屬輕度困擾、疲憊困擾屬輕度困擾。
- 二、乳癌婦女接受放射線治療期間最嚴重的症狀困擾依序為『疼痛』、『口乾』、『疲憊』、『睡眠障礙』及『悲傷』。
- 三、乳癌婦女接受放射線治療之『累積劑量』與『症狀困擾強度』、『疲憊困擾強度』無顯著相關。
- 四、乳癌婦女接受放射線治療期間照射『累積劑量』與『細胞激素 IL-1、IL-6、TNF- $\alpha$ 』濃度無顯著相關。
- 五、乳癌婦女接受放射線治療期間，細胞激素 IL-1、IL-6、TNF 與『症狀困擾強度』、『疲憊困擾強度』無顯著相關。
- 六、乳癌婦女接受放射線治療期間，血中細胞激素 TNF- $\alpha$  與疲憊症狀困擾則有顯著負相關。
- 七、乳癌婦女接受放射線治療期間，控制『時間因素』及『累積劑量』下，血中細胞激素 IL-1 與症狀困擾中的『疼痛』及『悲傷』症狀有顯著正相關。
- 八、控制『時間因素』及『累積劑量』下，『細胞激素 IL-6』與症狀困擾中的『噁心』呈現顯著負相關。
- 九、控制『時間因素』及『累積劑量』下，『細胞激素 TNF』與症狀困擾中的『疲憊』、『睡眠障礙』呈現顯著負相關。

本研究之結果可以提供及協助醫療照護小組成員瞭解乳癌患者進行放射治療期間的症狀困擾程度及其改變，乳癌病患進行放射線治療期間的細胞激素 IL-1、IL-6、TNF 與症狀困擾及疲憊症狀有正相關，故建議未來研究可以加入介入措施，例如：音樂治療、放鬆訓練或運動訓練等，比較介入措施對於症狀困擾與細胞激素的變化，同時採用質性研究方法，更可深入探討症狀困擾對於乳癌病患之衝擊。

### 英文摘要

Cytokines have a major role in cancer-related syndrome. In particular,

proinflammatory cytokines interleukin-1 (IL-1), interleukin-6 (IL-6), and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) may be released as part of host response to tumor or in response to tissue damage or depletion of immune cell subsets associated with cancer treatments. The aim of this study was to assess the level of symptom distress during radiotherapy of breast cancer patients and its relation among symptom distress, serum cytokines, and radiation doses. Twelve patients who received adjuvant radiotherapy without concomitant chemotherapy after Breast-conserving surgery were prospectively studied. Patients rated their cancer-related symptom with two standardized self-assessment instruments, the M.D.Anderson Symptom Inventory-Taiwan Form (MDASI-T) and Brief Fatigue Inventory- Taiwan Form, BFI-Taiwan Form (BFI-T), before radiotherapy, during week 1-5 of treatment, and one week after radiotherapy completion. The serum of cytokines IL-1, IL-6, and TNF- $\alpha$  were determined in parallel to the symptom assessments. Symptom distress measure with the MDASI-T did not increase significantly during treatment, but the subscores on pain intensity were elevated during treatment week 5 and week 6. Radiation doses did not correlate with symptom distress, fatigue, IL-1, IL-6, and TNF- $\alpha$  during therapy. We observed cytokines IL-1 was significantly related to pain and depress. The IL-6 was significantly related to nausea. The TNF- $\alpha$  was significantly related to fatigue and sleep distress. Consequently, this longitudinal prospective study was undertaken to investigate the pattern and duration of symptom distress experienced by individuals with breast cancer during the course of and after treatment with radiation therapy.