

國軍左營總醫院放射腫瘤科

2023 年食道癌放射線治療指引

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食道癌放射治療指引與監測修正對照表

2023	2024	說明
新修訂		新訂

放射治療適應症

一、根治性目的(curative intent)

1. T1-T4a 健康狀況不適合手術但可化學治療，或不選擇手術的 M0 病人
2. 同步化學及放射治療-T1b-T4b，or N+，M0
3. 手術前輔助治療-T1b-T4a，or N+，M0
4. 手術後輔助治療-R1 or R2 resection；pT3 (option)，pT4 or pN+.
5. 未產生遠端轉移之局部復發
6. 寡轉移(oligometastases)且 ECOG performance status < 2

二、緩解性目的(palliative intent)

1. T4b 且 ECOG performance status ≥ 2
2. 遠端轉移病灶
3. 產生症狀之局部復發併有遠端轉移
4. 寡轉移(oligometastases)且 ECOG performance status ≥ 2
5. 健康狀況不適合手術及化學治療的 M0 病人

根治性放射治療必要流程

一、治療計劃前完整的臨床評估

1. 確認期別及病理報告。
2. 必要檢驗以排除全身多處轉移可能。
3. 經團隊會議討論或相關科別照會。

二、治療體位設定

1. 病人採仰臥，通常食道腫瘤中段及下段雙側上肢上舉。若為上段腫瘤，可不需上肢上舉。以頸肩胸模具固定，治療標記設定於模具及身體上。

三、模擬攝影

1. 病人依設定體位躺上電腦斷層攝影床，必要時以金屬線進行標記，並配合模具。通常病人可採自由呼吸。
2. 通常電腦斷層掃描每切面間距應不大於 5mm，掃描範圍應至少包括腫瘤及全肺部並超過治療區域 5-10 cm。
3. 掃描後應注意中心點是否偏移，並以油性水洗不掉簽字筆作好標記供治療辨認。

四、治療計劃(treatment planning)-

1. 腫瘤體積(TV target volume)

A. Definitive RT：GTV以CT，PET or endoscopy可見腫瘤為主。

- (1) CTV-tumor為tumor + 2-4 cm superior and inferior margins and a 0.5-1.0 cm lateral margin.
- (2) CTV-lymph node 包含潛在轉移區域，involved nodal irradiation (preferred) or elective nodal irradiation
- (3) PTV包含呼吸移動及擺位誤差。可適當搭配slow CT or 4D CT (with/without breath holding or gating)來決定ITV (internal target volume)。
通常為 CTV + 0.5-1.0 cm。
- (4) Involved nodal irradiation：Lymph node + 0.5-1.5 cm margins
- (5) Elective nodal irradiation：
 - i. Cervical esophagus：para-esophageal LNs + SCF LNs + higher echelon neck LNs
 - ii. Upper third esophagus：para-esophageal LNs + SCF LNs
 - iii. Middle third esophagus：para-esophageal LNs
 - iv. Lower third esophagus：para-esophageal LNs + lesser curvature LN + celiac axis LN

- B. Adjuvant RT：CTV以食道tumor and LAP bed & high risk lymphatic region (anastomosis：option)，或疑有殘存腫瘤處為主。
 - C. At least 95 % PTV is covered by 95% prescribed dose；no more 1% PTV received 110% prescribed dose
 - 2. 放療劑量：Definitive 治療 50-50.4 Gy(1.8–2 Gy/Fx)◦Neoadjuvant 治療 41.4-50.4 Gy (1.8–2 Gy/Fx)◦Adjuvant 治療 45-50.4 Gy (1.8–2 Gy/Fx)◦
*以上劑量依照 performance status，risk factors (margin close，margin positive，ENE 及正常組織耐受劑量(Lung，spinal cord，stomach，bowel，liver，heart) 可予以調整。頸部段食道癌不接受手術時，可考慮使用較高放射劑量(≤ 63 Gy)。若病情需要更高劑量，需於本科或團隊會議討論。
 - 3. 體外放射治療技術建議 3DCRT 或 IMRT。
 - 4. 劑量評估參數：至少包括肺部劑量(以 V20，mean lung dose 等)、心臟、脊髓劑量等。
 - 5. 建議使用 6-10 MV x-ray with heterogeneity correction。
- 五、放射治療前評估紀錄：包括期別、病理報告、病人簡史、理學檢查、重要檢查結果、診斷、體能狀態及治療計劃。
- 六、首次治療前應使用定位照相或影像導引以確保照射範圍正確性，並由醫師確認簽章後才能進行。

根治性食道癌放射治療副作用評估

Adverse Event	Grade				
	1	2	3	4	5
Esophagitis	Asymptomatic; clinical or diagnostic observations only; intervention not indicated	Symptomatic; altered eating/swallowing; oral supplements indicated	Severely altered eating/swallowing; tube feeding, TPN or hospitalization indicated	Life-threatening consequences; urgent operative intervention indicated	Death
Dermatitis radiation	Faint erythema or dry desquamation	Moderate to brisk erythema; patchy moist desquamation, mostly confined to skin folds and creases; moderate edema	Moist desquamation in areas other than skin folds and creases; bleeding induced by minor trauma or abrasion	Life-threatening consequences; skin necrosis or ulceration of full thickness dermis; spontaneous bleeding from involved site; skin graft indicated	Death
Pneumonitis	Asymptomatic; clinical or diagnostic observations only; intervention not indicated	Symptomatic; medical intervention indicated; limiting instrumental ADL	Severe symptoms; limiting self care ADL; oxygen indicated	Life-threatening respiratory compromise; urgent intervention indicated (e.g., tracheotomy or intubation)	Death

重要器官劑量限制

Liver : $V_{30Gy} < 33\%$, mean dose $\leq 23Gy$

Kidney: $V_{20Gy} \leq 33\%$, Mean $< 18Gy$

Spinal cord : $\leq 48Gy$

Heart : $1/3 \leq 40Gy$

Stomach max dose $\leq 54Gy$; Bowel $\leq 54Gy$

Lung : $V_{20} \leq 38\%$, $V_{10} \leq 50\%$, mean dose $\leq 20Gy$

根治性食道癌放射治療可能副作用與處置：可參見國衛院放療共識手冊。

一、急性副作用：

1. 噁心、嘔吐：選擇清淡易消化之食物，少量多餐，嚴重時可請醫師處方。
2. 喉嚨及食道炎：吞嚥時食道有灼熱感，改用柔軟之食物，必要時可請醫師處方或暫停治療。
3. 咳嗽：可請醫師處方。

二、慢性副作用：

1. 食道狹窄：吞嚥困難，可用擴張器擴張或手術治療。
2. 肺部發炎或纖維化引起咳嗽、氣喘、呼吸困難，可用藥物及氧氣治療。
3. 脊髓炎：下半身麻木感覺或麻痺，可用高壓氧治療。
4. 少數其他可能之副作用如心血管疾病，胸壁副作用，臂神經損傷，氣管副作用，肝臟副作用，腸道副作用，腎臟副作用。

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2023 年食道癌放射治療品質監測指標

1. 根治性食道癌病人接受放射治療前，主治醫師對該療程進行確認及簽章比率:閾值:95%
分子定義：監測期間內，因食道癌進行根治性放射治療，於接受放射治療前，主治醫師對病患療程進行確認及簽章之人數
分母定義：監測期間內，因食道癌進行根治性放射治療總人數
2. 根治性食道癌病人接受放射治療前，使用定位照相以確保照射範圍正確性之比率:閾值:95%
分子定義：監測期間內，因食道癌進行根治性放射治療，於接受放射治療前，使用定位照相或影像導引以確保照射範圍正確性之人數
分母定義：監測期間內，因食道癌進行根治性放射治療總人數
3. 根治性食道癌病人接受放射治療時，劑量符合標準政策之比率:閾值:90%
分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，總劑量與標準劑量誤差為正負(含)10%以內之人數
分母定義：監測期間內，因食道癌進行根治性放射治療總人數
4. 根治性食道癌病人接受放射治療時，治療時間符合標準政策之比率:閾值:90%
分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，總治療時間與標準治療時間誤差為正負(含)兩週之人數
分母定義：監測期間內，因食道癌進行根治性放射治療總人數
5. 根治性食道癌病人接受放射治療時，治療次數符合標準政策之比率:閾值:90%以上
分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，實際次數與標準次數誤差為正負(含)10%以內之人數
分母定義：監測期間內，因食道癌進行根治性放射治療總人數
6. 根治性食道癌病人接受放射治療時，急性期非血液副作用出現第三級或以上之反應的比率:閾值:30%

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分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，急性期副作用出現第三級或以上之反應之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

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