Evidence Table

Clinical Area: **FDG-PET scan for imaging of patients with a history of cervical cancer.**

Reference: **Lai G-H, Huang K-G, See L-C et al. Restaging of recurrent cervical carcinoma with dual-phase 18F fluoro-2-deoxy-d-glucose positron emission tomography. Cancer 2004; 100: 544-552.**

Study Type: Case Series (prospective with historical controls)
Study Aim: To assess the diagnostic efficacy and benefit of PET for restaging cervical cancer at the time of first recurrence.

Outcomes

- *Primary*: Percentage of patients with improved restaging (indicated by a change in treatment plan) after PET imaging.
- *Secondary:* 2-year survival between study patients and historical controls who did not have PET restaging.

Design

- *Number of subjects:* n=40
- *Description of study population:* Study conducted in a single hospital in Taiwan. Median time to recurrence=16 months (range=10-27 months). 15 patients had primary radical surgery and 25 patients received radiation treatment.
- *Inclusion criteria:* Biopsy-documented recurrent or persistent cervical cancer after definitive radiation treatment or surgery; no contraindications to CT/MRI or PET scanning; potentially curable disease; willingness to receive curative salvage therapy if likely to be useful.
- *Exclusion criteria:* Re-recurrence after salvage therapy; a superficial lesion on the cervix or vaginal cuff only; disseminated abdominal or pleural lesions with positive fluid cytology; >2 involved regions; history of other malignancy.
- *Consecutive patients?* Not specified for study cohort.
- *Intervention*: At the time of initial assessment, patients underwent chest x-ray and abdominal and pelvic CT scanning when central disease was not suspected (n=21) or MRI scanning when central disease was suspected (n=19). PET scans were performed within 2 weeks of CT/MRI scans. Fusion of CT/MRI and PET images using commercially available software was performed for abnormally raised FDG uptake regions or for discrepant results. Tissue-based verification (surgical exploration or CT- or ultrasound- guided biopsy) was performed whenever possible for suspicious lesions detected by CT/MRI or PET. If biopsy was not feasible, a second assessment with CT/MRI and PET was performed 3-6 months later to avoid false-negative findings. A cohort of historical controls were identified in the hospital database.
- *Source of outcome data*: CT, MRI and PET scans.
- *Length of follow-up:* Up to 6 months. Also used historical controls.

Validity

- *Was population homogenous?* All had initial recurrence.
- *Potential selection biases:* May be difference between study cohort and historical controls.

- *Were intervention/ care/follow-up similar in each group?* Patients received CT or MRI, and biopsy or follow-up CT/MRI.
- *Did an objective observer assess outcomes?* Not specified.
- *Completeness of follow-up:* 100%.
- **Conclusions regarding validity of methods:**

For patients who tested positive, the PET images were fused with CT/MRI, so this is not simply an evaluation of patient staging with and without PET. For the survival outcome, there are likely to be baseline differences between the study cohort and the historical control group.

Results

Treatment plan before and after PET

	Primary surgery (n=15)		Primary radiotherapy (n=25)	
	Before	After	Before	After
Recurrence pattern				
Central	4	2	11	6
Pelvic	3	2	2	0
Distant	8	7	12	10
Central/pelvic + distant	0	4	0	9
Salvage treatment plan				
Curative intent				
Chemo and RT	11	5	12	7
Surgery ± IORT	4	5	13	8
Palliative intent	0	5	0	10

RT=radiotherapy; IORT=intraoperative radiotherapy

22 (55%) patients had their treatment changed
- 7 continued to be treated with curative intent but had the treatment field or modality changed
- 15 shifted from curative to palliative treatment

Survival

15 patients died of disease within 2 years
25 patients remained alive (14 with disease present).

The 7 patients who continued to be treated with curative intent but had the treatment field or modality altered remained alive for the 2 year period.

Among the 15 patients who underwent primary surgery, there was a significantly better overall survival rate than historical controls who were managed without PET (HR=0.21, 95% CI=0.05-0.83).

Among the 25 patients who underwent primary radiotherapy treatment, there was no significant difference in survival compared with historical controls.

Authors' Conclusions

"Dual-phase FDG-PET is superior to CT/MRI in the restaging of recurrent cervical carcinoma. Restaging with PET provides benefit by allowing the physician to offer optimal management of recurrent cervical carcinoma."

Reviewer's Conclusions

The study evaluated improved restaging of cervical cancer recurrence after PET imaging. For patients with a positive PET scan, images were fused with CT/MRI results. 22 out of 40 patients had their treatment changed after PET imaging, 15 changed from curative to palliative treatment. It is not clear whether patient outcomes would have been better or worse without PET imaging. When compared to historical controls, surgically managed patients (n=15), but not radiotherapy managed patients (n=25), had a better survival rate after 2 years. The study had a small sample size, and statistical estimates are not robust.