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Cervical Cancer Management: How Imaging Can Diagnose Lymph Node Metastases?

Cervical cancer ranks as the fourth most common cancer among women worldwide, with significant morbidity and mortality rates. A key determinant of prognosis and treatment decisions in cervical cancer is the presence of lymph node involvement. The revised staging system by the International Federation of Gynaecology and Obstetrics (FIGO) in 2018 emphasises the importance of lymph node status, which is now incorporated through imaging techniques. This evolution underscores the increasing role of imaging in managing cervical cancer.

Importance of Accurate Nodal Assessment in Treatment Decisions

Accurate assessment of lymph node status is crucial for determining the appropriate treatment approach for patients with early-stage cervical cancer. Typically, treatment options include radical hysterectomy or (chemo)radiotherapy, with the choice often contingent upon nodal involvement. Imaging modalities such as MRI, CT, and [18F]FDG-PET-CT play a vital role in nodal staging, influencing treatment decisions in approximately 13% of cases. However, the utilisation of these imaging techniques in clinical practice varies due to a lack of consensus regarding their efficacy and reliability. Prior meta-analyses have attempted to evaluate the performance of MRI, CT, and [18F]FDG-PET-CT in detecting lymph node metastases. However, these analyses primarily relied on retrospective data, which carries a high risk of selection bias. This bias, known as partial verification bias, arises when not all patients undergo pathological examination of suspicious nodes, particularly those who receive primary chemoradiotherapy. Consequently, the accuracy estimates of imaging modalities may be skewed.

New Insights Towards a Promising guide for treatment strategies

To address these limitations, a recent retrospective cohort study in the Netherlands examined the diagnostic accuracy of MRI, CT, and [18F]FDG-PET-CT for lymph node metastases in early-stage cervical cancer. The study leveraged data from the Netherlands Cancer Registry, encompassing over 2000 patients between 2009 and 2017, with lymph node status assessed by imaging modalities and confirmed by pathological examination. The study findings revealed that [18F]FDG-PET-CT exhibited superior sensitivity in detecting nodal metastases compared to MRI and CT, with a sensitivity of 80% when used as a verification modality. Conversely, MRI and CT demonstrated higher specificity, indicating their ability to accurately exclude patients without nodal metastases. Notably, the study also highlighted the challenges in detecting metastases in the common iliac region compared to the pelvic region, emphasising the importance of comprehensive imaging coverage. This suggests that [18F]FDG-PET-CT may hold promise in identifying patients at high risk of nodal metastases, particularly in cases where MRI reveals suspicious nodes. However, caution is warranted in interpreting imaging results to guide treatment decisions, given the potential for false-positive or false-negative results, especially in cases involving the common iliac region.

Challenges before effective implementation into clinical practice

The study also acknowledged several limitations, including potential variability in imaging techniques and the retrospective nature of the analysis. Future studies incorporating advanced imaging techniques, such as diffusion-weighted MRI, may further enhance diagnostic accuracy and reduce the need for verification by [18F]FDG-PET-CT. In conclusion, the study underscores the evolving role of imaging modalities in the management of early-stage cervical cancer and suggests a potential role for [18F]FDG-PET-CT in identifying patients at high risk of nodal metastases. Prospective studies are needed to validate these findings and guide their effective implementation into clinical practice. Additionally, addressing partial verification bias in future research may provide more accurate estimates of diagnostic performance in cervical cancer staging, ultimately improving patient outcomes.

Source: Insights into Imaging

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