Redefining MRI:
From Image to Insight

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MRI Evaluation of Pancreatic Cystic Lesions: Beyond Current Guidelines

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The increasing use of cross-sectional imaging has led to a growing number of incidentally detected pancreatic cystic lesions (PCLs), many of which are branch-duct intraductal papillary mucinous neoplasms (BD-IPMNs). Because IPMN encompasses a broad spectrum ranging from low-grade dysplasia to invasive carcinoma, accurate imaging-based risk stratification is essential to avoid both unnecessary surgery and delayed treatment of malignant disease. The 2024 International Association of Pancreatology (Kyoto) Guidelines provide the most up-to-date evidence-based recommendations for the diagnosis, risk assessment, and surveillance of IPMN and have become the current reference standard in clinical practice.

This lecture will review the imaging evaluation of pancreatic cystic lesions within the framework of the 2024 Kyoto Guidelines, with particular emphasis on the evolving role of MRI. The evolution of international consensus guidelines, from the Sendai and Fukuoka Guidelines to the current Kyoto Guidelines, will be briefly outlined to provide the background for recent changes in management strategies. Major updates in the Kyoto Guidelines, including revised definitions of high-risk stigmata and worrisome features, incorporation of cytologic findings, recognition of cumulative risk associated with multiple worrisome features, and updated surveillance recommendations, will be discussed from a practical imaging perspective.

The complementary roles of MRI, CT, endoscopic ultrasound, contrast-enhanced endoscopic ultrasound, and cyst fluid analysis will be reviewed, highlighting the strengths and limitations of each modality in clinical decision-making. Particular attention will be given to practical imaging challenges frequently encountered in daily practice, including differentiation between mural nodules and solid components, assessment of multifocal branch-duct IPMNs, interpretation of multiple worrisome features, and imaging findings that influence recommendations for surgery or continued surveillance.

Beyond reviewing the current guidelines, the lecture will address several unresolved issues in imaging-based risk stratification, including the relative importance of combinations of worrisome features, the potential role of predictive nomograms, and the uncertainty surrounding surveillance discontinuation in patients with stable BD-IPMN. Emerging evidence supporting these topics will be reviewed to illustrate areas where individualized imaging assessment may complement existing guideline recommendations.

By integrating the 2024 Kyoto Guidelines with practical imaging considerations and recent supporting evidence, this lecture aims to provide radiologists with a comprehensive and clinically applicable approach to evaluating pancreatic cystic lesions and to facilitate informed multidisciplinary decision-making in routine practice.

Keywords: *Pancreatic cystic lesions, Intraductal papillary mucinous neoplasm (IPMN), Magnetic resonance imaging (MRI), Kyoto Guidelines, Risk stratification*