

NEN 概述

神经内分泌肿瘤 (NEN) 概述

神经内分泌肿瘤 (NEN) 是一组异质性的肿瘤，起源于神经内分泌细胞。

神经内分泌肿瘤 (NEN) 分类

WHO 2017 年《内分泌器官》和 2019 年《消化系统》分类系统对 NEN 进行了重新定义。NEN 包括神经内分泌肿瘤 (NET)、神经内分泌癌 (NEC) 和神经内分泌癌肉瘤 (MiNEN)。NET 根据 Ki-67 指数分为 G1 (Grade 1)、G2 (Grade 2) 和 G3 (Grade 3) 三个等级。NEC 分为小细胞型 (SCNEC) 和大细胞型 (LCNEC)。MiNEN 是指同时包含 NET 和 NEC 成分的肿瘤。WHO 2019 年对 NEC 的定义进行了更新，将 Ki-67 指数 ≥ 30% 作为诊断标准。

NEN 分期

WHO 2021 年《胸腔肿瘤》分类系统对 NEN 的分期进行了更新。NET 的分期主要基于 TNM 分期系统。Staging 系统包括 TNM 分期、ENETS 分期和 AJCC/UICC 分期。WHO 2019 年对 NEC 的分期进行了更新，将 Ki-67 指数 ≥ 5% 作为诊断标准。Albertelli M, et al. Front Endocrinol (Lausanne). 2021; 12: 680305.

1 WHO 分类

WHO2010 ¹ Digestive systems	WHO2017 ² Endocrine Organs	WHO2019 ³ Digestive systems
Neuroendocrine tumour NET G1/G2	Neuroendocrine tumour NET G1/G2/G3 Well-differentiated NEN	Neuroendocrine tumour NET G1/G2/G3 Well-differentiated NEN
Neuroendocrine carcinoma NEC G3 large cell or small cell type	NEC G3 large cell or small cell type poorly differentiated NEN	NEC G3 large cell or small cell type poorly differentiated NEN

WHO2010¹

Digestive systems

Mixed adeno-neuroendocrine carcinoma
MANEC

Hyperplastic and preneoplastic lesions

WHO2017²

Endocrine Organs

Mixed neuroendocrine-non-neuroendocrine neoplasm
MiNEN

WHO2019³

Digestive systems

Mixed neuroendocrine-non-neuroendocrine neoplasm
MiNEN*

NEC MANEC MANEC

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		Grade	cells/ 2mm ² ^a	Ki-67 ^b
NET G1		Low	2	3
NET NET G2		Intermediate	2-20	3-20
NET NET G3		High	20	20
NEC Small cell type [SCNEC]		High ^c	20	20
NEC Large cell type [LCNEC]			20	20
MiNEN	or ^d	Variable ^d	Variable ^d	Variable ^d

a. 0.2mm² 50 10mm² 2mm² 10HPF 40 0.5mm

b. Ki-67 500 Grade Ki-67

c. NEC grading high-grade

d. MiNEN NE NE NE NEC
MiNEN NE NE grading

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		cells/ 2mm ²	
	5mm	2	
		2-10	
	3	10	
	N/C Ki-67 30% NSE 1	11	

1. WHO Classification of Tumours of the Digestive System. Eds: Bosman FT, et al. 4th Edition, 2010, IARC Press, Lyons France.
2. WHO Classification of Tumours of Endocrine Organs. Eds: Lloyd RV, et al. 4th edition, 2017, IARC Press, Lyon, France.
3. WHO Classification of Tumours. Digestive System Tumours. Eds: WHO Classification of Tumours Editorial Board. 5th Edition, 2019, IARC Press, Lyon, France.

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