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# Subtype Classification and Clinicopathological Features of Gastric Neuroendocrine Neoplasms: 487 cases of multi-center retrospective analysis

Yuanliang Li<sup>1</sup>, Pan Zhang<sup>1</sup>, Yu Zhang<sup>2</sup>, Xiaokou Li<sup>1</sup>, Zhiwei Zhou<sup>3</sup>, Wei Wang<sup>3</sup>, Cheng Fang<sup>3</sup>, Fei Yin<sup>4</sup>, Hong Zhao<sup>5</sup>, Xiao Chen<sup>5</sup>, Jie Li<sup>6</sup>, Panpan Zhang<sup>6</sup>, Ye Chen<sup>7</sup>, Huishan Chen<sup>7</sup>, Jianming Xu<sup>8</sup>, Qian Xu<sup>8</sup>, Xianjun Yu<sup>9</sup>, Heli Gao<sup>9</sup>, Runxiang Yang<sup>10</sup>, Jixi Liu<sup>11</sup>, Xiudong Qiu<sup>1</sup>, Dou Dou<sup>1</sup>, Jie Luo<sup>12</sup>, Jie Chen<sup>2</sup>, Huangying Tan<sup>1</sup>

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**Huangying Tan** 





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### Abstract

- Introduction: Nowadays, the subtype classification for gastric neuroendocrine neoplasms (g-NENs) is controversial, we analyzed the clinicopathological features and prognosis of g-NENs using a modified subtype classification in China.
- Methods: A total of 487 cases with g-NENs were collected. The criteria of subtype classification for g-NENs are as follows: well-differentiated g-NENs are divided into 3 types: type 1, with hypergastrinemia and achlorhydria, are associated with autoimmune gastritis; type 2, with hypergastrinemia and Zollinger-Ellison syndrome, are related with gastrinoma or multiple endocrine neoplasia type 1; type 3 are sporadic disease with normal gastrin and gastric acid secretion; poorly-differentiated neuroendocrine carcinoma and mixed adenoneuroendocrine carcinoma belong to type 4. Data were analyzed by univariate and multivariate analysis for evidence of patient survival.
- Results: Among the 487 g-NENs patients, there were 149 (30.6%) with type 1, 8 (1.6%) with type 2, 84 (17.3%) with type 3 and 246 (50.5%) with type 4. The 5-year overall survival rates were 98.7%, 100%, 65.9% and 32.2% respectively. neuroendocrine carcinoma G3, distant metastasis, type 4 tumours and chemotherapy were independent prognostic factors among patients with g-NENs.
- Conclusion: G-NENs were heterogeneous, ranging from indolent to highly malignant biological behaviour. The modified Four-type classification is useful for management and prognostic evaluation of g-NENs.
- Keywords: gastric neuroendocrine neoplasms; four-type classification; clinicopathological features; prognosis





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### Introduction

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### Methods

 A total of 487 cases with g-NENs were collected. The criteria of subtype classification for g-NENs are as follows: well-differentiated g-NENs are divided into 3 types: type 1, with hypergastrinemia and achlorhydria, are associated with autoimmune gastritis; type 2, with hypergastrinemia and Zollinger-Ellison syndrome, are related with gastrinoma or multiple endocrine neoplasia type 1; type 3 are sporadic disease with normal gastrin and gastric acid secretion; poorly-differentiated neuroendocrine carcinoma and mixed adenoneuroendocrine carcinoma belong to type 4. Data were analyzed by univariate and multivariate analysis for evidence of patient survival.



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### Results

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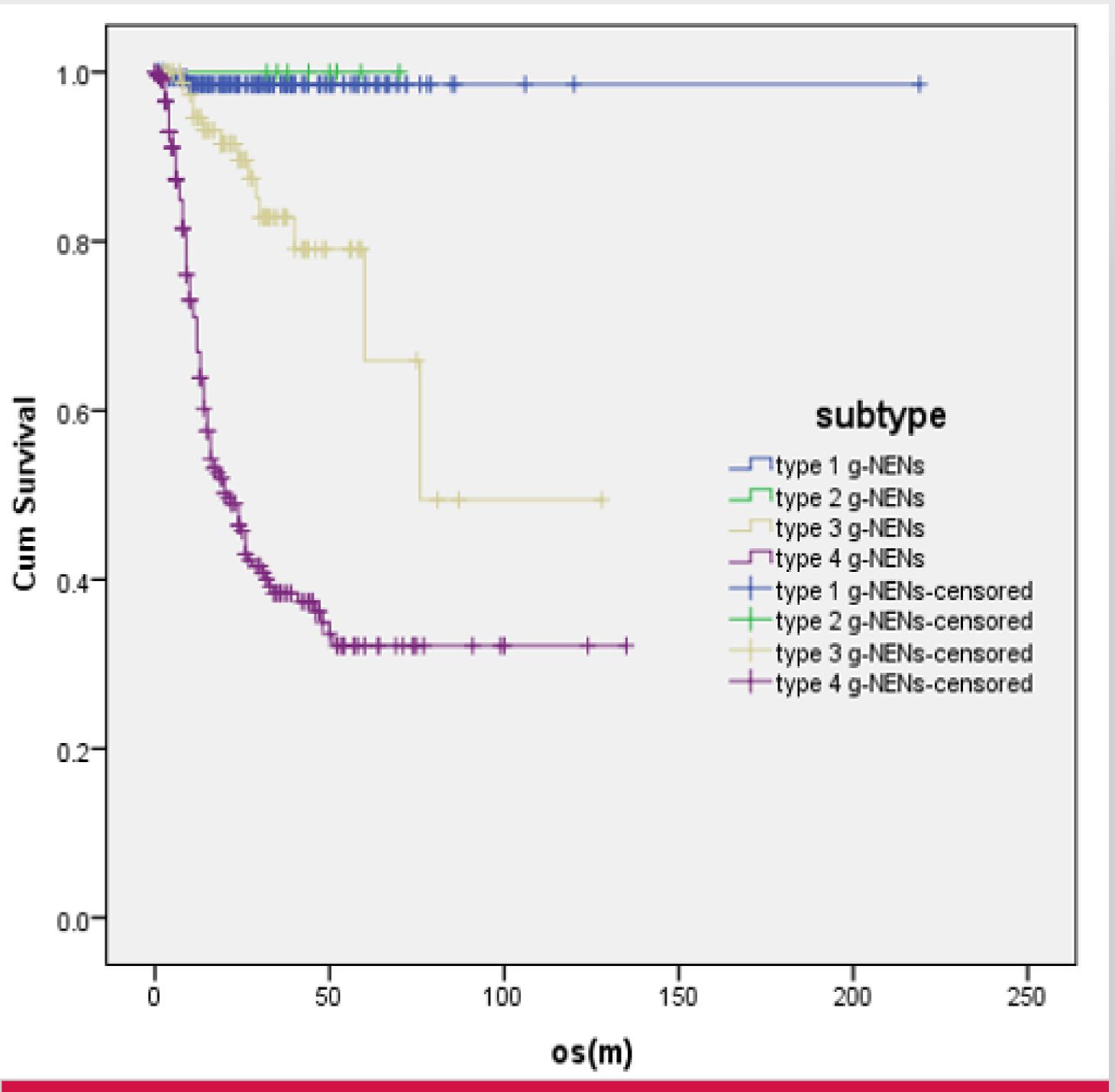


Figure A. Kaplan–Meier survival curve of patients with gastric neuroendocrine neoplasms





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### Conclusion

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