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Incidence and Characterization of Carcinoid Crises post Embolization of Neuroendocrine Tumor Liver Metastases

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BACKGROUND

Transarterial embolization (TAE) of neuroendocrine tumor liver metastases (NETLMs) involves delivery of embolic agents into the hepatic arterial supply of the tumor. Embolotherapies, similar to surgical resection, of NETLMs may instigate a potentially life-threatening period of hemodynamic instability, termed a carcinoid crisis. Currently, this life-threatening complication is not reported or well-studied post NETLM embolizations. Further, there is poor evidence supporting the use of octreotide, the current prophylaxis and standard of care for these perioperative crises. However, the pathophysiology of these events remain unknown, contributing to the lack of standardized care. The aim of the current study is to investigate the incidence of carcinoid crises post embolotherapy and direct future studies addressing the management of carcinoid crises.

METHODS

Data were collected retrospectively from patients undergoing transarterial embolization (bland embolization, chemoembolization, and radioembolization) for a NETLM from January 1, 2010 to January 1, 2024 at the University of Kentucky. Continuous variables were analyzed using Student's independent t-tests, and categorical variables were analyzed using Fisher's Exact Test. A crisis was defined as an intra-procedural crisis as documented by the performing physician or clinically important hemodynamic instability (sustained systolic BP <80 or >180mmHg or sustained tachycardia >120bpm) not attributable to other factors within 48 hours post-procedure.

RESULTS

There were nine suspected crises of 211 procedures (4.3%) and 113 patients (8.0%). Eight of these occurred post-procedurally, three of which met the criteria for a SIRS response in the absence of infection. The management of these crises was highly variable with five patients receiving prophylactic octreotide and only two patients receiving octreotide during the crisis.

CONCLUSIONS

Carcinoid crises are life-threatening events and can occur post-procedurally for patients undergoing hepatic artery embolization of NETLMs. The incidence post-embolization of NETLMs observed in this study is lower than reported post-surgical resection (typically reported around 30-40%). The occurrence of SIRS responses supports a mechanism of distributive shock. There was no consistent management protocol utilized for the prevention or treatment of carcinoid crisis post-resection or post-embolization. Therefore, future studies should focus on developing a standardized protocol for periprocedural prophylaxis and management of carcinoid crisis.

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