C-43

Mapping the evidence for surgical care of gastro-entero-pancreatic neuroendocrine tumors: a scoping review

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BACKGROUND

Surgical management remains the cornerstone in the management of gastro-entero-pancreatic neuroendocrine tumors (GEP-NETs), yet indications and procedures are often inconsistent. To inform the development of a research agenda to strengthen the evidence in NETs surgical care, we conducted a scoping review to map the existing literature on surgery for GEP-NETs.

METHODS

The scoping review was conducted following the expanded framework of Arksey and O'Malley. A literature search was run on MEDLINE, Embase, and Scopus in October 2024 for studies published since 2000 reporting on any surgical intervention, performed under general or loco-regional anesthesia on adults with GEP-NETs at any stage. We excluded interventions performed with endoscopy or interventional radiology.

RESULTS

Among the 15,191 studies screened, 260 were included. Most publications were from the US, Italy and Germany. Publications included a majority of reviews, with 96 narrative reviews and 30 systematic reviews/meta-analyses covering a broad range of topics including management of functional vs non-functional NETs, perioperative therapies, liver transplantation, and minimally invasive surgery. Of the 118 original investigations, 97.5% were retrospective cohort studies and 67% were single-centre. The only 3 prospective cohort studies that examined surveillance of small pancreatic NETs (n=2) and assessment of nodal metastases in pancreatic NETs (n=1). Most publications addressed pancreatic NETs (Table). Of all publications included, the most common topics were observation of small pancreatic NETs, treatment of liver metastases, safety of minimally invasive surgery, and prognostication. Of original investigations, the majority compared surgical approaches, followed by examination of lymph node harvest, prognostic factors, and defining size cut-off for observation of pancreatic NETs.

Table. Distribution of included publications by extent of disease, stratified by primary NET site.

	Locoregional disease (n=110)	Metastatic disease (n=43)	Combined locoregional and metastatic disease (n=97)	All (n=250)
Gastro-enteric NETs	14 (12.7%)	6 (14.0%)	30 (30.9%)	50 (20.0%
Pancreatic NETs	85 (77.3%)	8 (18.6%)	43 (44.3%)	136 (54.4%)
Mixed NETs	11 (10.0%)	28 (65.1%)	22 (22.7%	61 (24.4%)
Other NETs	0 (0%)	1 (2.3%)	2 (2.1%)	3 (1.2%)

CONCLUSIONS

This scoping review highlights limitations and gaps in the evidence supporting surgical care for GEP-NETs. A considerable part of the literature is made of narrative reviews. Very few original investigations report prospective or multi-institutional data, and examination of pancreatic NETs dominate the literature. Gaps to target include: prospective data collection, multi-institutional studies, non-pancreatic NETs studies, focus on stage-specific and primary-site specific data, interventional studies of the value of surgery compared to other therapies and of perioperative therapies combined with surgery.

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