



What are the research trends and hot research topics of achalasia?

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Achalasia is a rare esophageal motility disorder characterized by the lack of peristalsis of the esophageal body and absent or incomplete relaxation of the lower esophageal sphincter (1). The incidence of achalasia is thought to be approximately 1 per 100,000 people (2). The etiology of achalasia has been unknown. The main pathophysiology is reported as the neurodegeneration of the esophageal myenteric plexus (1). The pneumatic esophageal dilatation, botulinum toxin injection, and surgical Heller myotomy has been used to treat achalasia (1-3).

Per-oral endoscopic myotomy (POEM) has been introduced as the treatment of achalasia in Japan in 2008 (4). It has been widely distributed to many countries, many endoscopic institutions, and endoscopists. Now, POEM is accepted as an alternative to surgical myotomy with excellent efficacy and safety with a low rate of serious adverse event. Recently published guidelines of achalasia recommend the POEM as one of the best treatments of achalasia (5-7).

POEM is a highly skilled therapeutic endoscopic procedure. Therefore, patients may be driven to a high-volume endoscopy center or endoscopist who performs a lot of procedures. A lot of research data may be concentrated in a specialized endoscopic center. To collect sufficient patient data, multi-institutional studies are easier than single-

institutional studies. During fourteen years after POEM was introduced, numerous research data were accumulated. The many systematic reviews and meta-analysis including more than one thousand papers were published about the procedures, efficacy, safety, short-term outcomes comparing other treatment modalities.

All of the systematic reviews, meta-analysis and the bibliometric analysis analyze large volumes of scientific data. The systematic reviews analyze the data quantitatively. The bibliometric analysis and the meta-analysis can analyze a large amount of qualitatively and quantitatively (8). Meta-analysis concentrates on summarizing empirical evidences by analyzing the relation between variables of the therapeutic effect (8,9).

Bibliometric analysis is a relatively new developed method in the science and business part exploring a big data. Performance analysis, one of the analysis techniques of the bibliometrics, analyzes the number of publications and citations per year or per research constituents. Publication represents research productivity, whereas citation is a measure of impact and influence. Citation per publication to measure the performance of research products. This bibliometrics have led to use clinical guidelines, predict the research trends and enhance understanding of large bibliometric datasets with retrospective research, eventually

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be able to facilitate knowledge creation (8,9)

The recently published report by Dr. Liu *et al*, “Publication trends of peroral endoscopic myotomy during 2010–2022: a bibliometric analysis” reviewed the data and compared contributions between countries, regions, institutions, journals, and authors (10). Bibliometric analysis of publications on achalasia was based on the databases Scopus. This report aimed to predict the treatment trends and potential hotspots in POEM research. Total of 1,853 publications were analysed. This comprehensive review covers the diagnosis and classification, management and outcomes, comparison with other treatment approaches, gastroesophageal reflux disease and fundoplication. In addition, the publications include POEM in specific populations such as children, or POEM-derived new techniques such as G-POEM (gastric peroral endoscopic myotomy) for gastroparesis. As a result, researches from the United States were the most common (n=743) and were pivotal influence (n=743), followed by research from China (n=346) and Japan 43 (n=223). Dr. Inoue and his colleagues were the most active researcher and Showa university (Japan) was the most active institution in the field of POEM research (10).

There has been lots of systematic reviews and meta-analysis about the treatment modality of achalasia, comparing the efficacy and safety, complications (11). However, there has been few studies reported the network analysis or bibliometric analysis are rare (12). The bibliometric analysis will help to predict research trends, hotspots and development for achalasia over time. The prediction models for recurrence after POEM and adverse events, long term efficacy and safety, Gastroesophageal reflux disease after POEM, or the outcomes of 2nd POEM after failure or recurrence after 1st POEM may be the further research spots.

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