INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Risk factors for lymph node metastasis in early gastric cancer: a systematic review and meta-analysis

Yilihamu, A[1]; Cai, YB[2].

Review question / Objective: **Early gastric cancer (EGC) refers to mucosal and submucosal involvement, and its 5-year survival rate is greater than 90% regardless of lymph node status (T1Nx). Minimally invasive surgery is becoming more and more popular in the treatment of early gastric cancer. Endoscopic resection (ER) includes endoscopic mucosal resection (endoscopic mucosal resection). EMR and endoscopic submucosal dissection (ESD) are minimally invasive procedures for EGC with low risk lymph node metastasis. It is comparable to surgery in terms of postoperative survival rate and other long-term outcomes, but significantly better than surgery in terms of postoperative hospital stay, cost, quality of life and long-term complications. However, for early gastric cancer with lymph node metastasis, the radical effect cannot be achieved. It is reported that 0.9 % of patients with absolute indication of ESD need subsequent gastrectomy, and 19.2 % of patients with expanded indication of ESD need subsequent gastrectomy. Residual cancer and lymph node metastases were detected in subsequent gastrectomy specimens in 5.6% to 11.5% and 7.5% to 16.7%, respectively. Therefore, only by accurately predicting lymph node metastases can unnecessary gastrectomy after ESD be avoided.Therefore, our objective is to determine the risk factors for lymph node metastasis in patients with early gastric cancer by systematic review and meta-analysis of related studies, so as to provide a basis for formulating a reasonable treatment plan for patients with early gastric cancer.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 October 2022 and was last updated on 19 October 2022 (registration number INPLASY2022100079).

INTRODUCTION

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Condition being studied: At present, for EGC patients without lymph node metastasis, preserving function or organs to improve postoperative quality of life has become the focus of treatment. The evaluation of the risk of lymph node metastasis is the key to the choice of treatment for early gastric cancer. The accurate assessment of the risk of lymph node metastasis in patients with EGC is not known because the occurrence of lymph node metastasis is relatively rare. In addition, the findings regarding some risk factors for lymph node metastasis have not been consistent in other studies. Therefore, our objective is to determine the risk factors for lymph node metastasis in patients with early gastric cancer by systematic review and meta-analysis of related studies, so as to provide a basis for formulating a reasonable treatment plan for patients with early gastric cancer.

METHODS

Search strategy: 5.Foreign language database:Pubmed：（The remaining 1-4 have no Chinese retrieval strategy and cannot be uploaded due to the word limit）

Type of disease: lymph node metastasis of early gastric cancer

Early gastric cancer subject words：

Stomach Neoplasms,

Free word:

Neoplasm, Stomach
Stomach Neoplasm
Neoplasms, Stomach
Gastric Neoplasms
Gastric Neoplasm
Neoplasm, Gastric
Neoplasms, Gastric
Cancer of Stomach
Stomach Cancers
Gastric Cancer
Cancer, Gastric
Cancers, Gastric
Gastric Cancers
Stomach Cancer
Cancer, Stomach
Cancers, Stomach
Cancer of the Stomach
Gastric Cancer, Familial Diffuse
early gastric cancer
EGC

Lymph node subject words：Lymph Nodes

Free word:

Lymph Node
Node, Lymph
Nodes, Lymph
lymph node metastasis

Metastasis subject words：Neoplasm Metastasis,

Free word:

Neoplasm Metastases
Metastases, Neoplasm
Metastasis, Neoplasm
Metastase
Metastases
Metastasis

Causation：

Influencing factors or risk factors or etiology or related factors:

Causation standard retrieval form:

(relative[Title/Abstract] AND risk*[Title/Abstract]) OR(relative risk[Text Word]) OR risks[Text Word] OR cohort studies[MeSH:noexp] OR (cohort[Title/Abstract] AND stud*[Title/Abstract])

pubmed:

Search: ((((("Stomach Neoplasms"[Mesh]) OR ((((((((((((((((((Neoplasm, Stomach) OR (Stomach Neoplasm)) OR (Neoplasms, Stomach)) OR (Gastric Neoplasms)) OR (Gastric Neoplasm)) OR (Neoplasm, Gastric)) OR (Neoplasms, Gastric)) OR (Cancer of Stomach)) OR (Stomach Cancers)) OR (Gastric Cancer)) OR (Cancer, Gastric)) OR (Cancers, Gastric)) OR (Gastric Cancers)) OR (Stomach Cancer)) OR (Cancer, Stomach)) OR (Cancers, Stomach)) OR (Cancer of the Stomach)) OR (Gastric Cancer, Familial Diffuse)) OR (early gastric cancer)) OR (EGC))) AND (("Lymph Nodes"[Mesh]) OR ((((Lymph Node[Title/Abstract]) OR (Node, Lymph[Title/Abstract])) OR (Nodes, Lymph[Title/Abstract])) OR (lymph node metastasis[Title/Abstract])))) AND (("Neoplasm Metastasis"[Mesh]) OR ((((((Neoplasm Metastases[Title/Abstract]) OR (Metastases, Neoplasm[Title/Abstract])) OR (Metastasis, Neoplasm[Title/Abstract])) OR (Metastase[Title/Abstract])) OR (Metastases[Title/Abstract])) OR (Metastasis[Title/Abstract])))) AND ((relative[Title/Abstract] AND risk*[Title/Abstract]) OR (relative risk[Text Word]) OR risks[Text Word] OR cohort studies[MeSH:noexp] OR (cohort[Title/Abstract] AND stud*[Title/Abstract]))

6.Embase :

Lymph node subject words: lymph node metastasis

Free word: lymph gland metastasis
lymph metastasis
lymphatic metastasis
lymphatic node metastasis
lymphnode metastasis
lymphogenic metastasis
lymphogenous metastasis
lymphoid metastasis
metastasis
lymph node
metastasis
lymphatic
metastatic lymph node

Embase: Note: Submit excel sheets (too large to copy).

7.Cochrance:

#1 MeSH descriptor: [Stomach Neoplasms] explode all trees 2911
#2 (Neoplasm, Stomach):ab,ti,kw or (Stomach Neoplasm):ab,ti,kw or (Neoplasms, Stomach):ab,ti,kw or (Gastric Neoplasms):ab,ti,kw or (Gastric Neoplasm):ab,ti,kw or (Neoplasm, Gastric):ab,ti,kw or (Neoplasms, Gastric):ab,ti,kw or (Cancer of Stomach):ab,ti,kw or (Stomach Cancers):ab,ti,kw or (Gastric Cancer):ab,ti,kw or (Cancer, Gastric):ab,ti,kw or (Cancers, Gastric):ab,ti,kw or (Gastric Cancers):ab,ti,kw or (Stomach Cancer):ab,ti,kw or (Cancer, Stomach):ab,ti,kw or (Cancers, Stomach):ab,ti,kw or (Cancer of the Stomach):ab,ti,kw or (Gastric Cancer, Familial Diffuse):ab,ti,kw or (early gastric cancer):ab,ti,kw or (EGC):ab,ti,kw 10739
#3 #1 or #2 10739
#4 MeSH descriptor: [Lymph Nodes] explode all trees 907
#5 (Lymph Node):ab,ti,kw or (Node, Lymph):ab,ti,kw or (Nodes, Lymph):ab,ti,kw or (ymph node metastasis):ab,ti,kw 12964
#6 #4 or #5 12970
#8 (Neoplasm Metastases):ab,ti,kw or (Metastases, Neoplasm):ab,ti,kw or (Metastasis, Neoplasm):ab,ti,kw or (Metastase):ab,ti,kw or (Metastases):ab,ti,kw or (Metastasis):ab,ti,kw 27673
#9 #7 or #8 27860
#10 #6 or #9 35367
#11 (relative risk):ab,ti,kw OR (cohort studies):ab,ti,kw 49387
#12 #3 and #10 and #11 69

8.Web of Science:

https://www.webofscience.com/wos/alldb/summary/95c5dd09-1828-4bb8-bfbf-3bc5c4aa4192-52f2bcef/relevance/1

Participant or population: Lymph node metastasis of early gastric cancer.

Intervention: Risk factors.

Comparator: Patients with early gastric cancer without lymph node metastasis

Study designs to be included: Case-control study or cohort study

Eligibility criteria: Inclusion criteria :(1) Case-control study or cohort study designed as risk factors for lymph node metastasis in early gastric cancer; (2) The original data, OR value, 95%CI OR convertible OR value, 95%CI are provided; (3) Papers published from January 1, 2010 to October 1, 2022 and published in SCI or Chinese core science and technology journals. Exclusion criteria :(1) Review literature, abstract only, no control group, original studies with sample size < 100; (2) only specific types of gastric cancer were studied; (3) The definition of risk factors is not accurate, and the full text of the literature cannot be obtained. (4) The main research objects were people before 2010.

Information sources: Web Of Science database, Pubmed database, Embase database, Cochrane Library, Chinese databases (CNKI, Wanfang, CBM, VIP)

Main outcome(s): Risk factors for lymph node metastasis in early gastric cancer: Lymphatic invasion, vascular invasion, undifferentiated type, Invasion depth of submucosa ≥500 μm, Morphological ulcer, Sex factor, Tumor diameter

Quality assessment / Risk of bias analysis: Our study followed the MOOSE reporting specification.The quality of each study that met the inclusion criteria was assessed using the Newcastle-Ottawa scale (NOS), with scores ranging from 0 to 9, with a total score of ≥6 indicating high quality studies.

Strategy of data synthesis: RevMan 5.3 and Stata14 were used to merge the extracted data. Pooled results were expressed as odds ratios (ORs) and 95% confidence intervals (95%CI). Q test and I2 analysis were used to evaluate the heterogeneity among the included studies [8]. When p > 0.1 and I2 < 50%, it indicated that there was no statistical heterogeneity among the studies, and the data were analyzed using the fixed-effect model. In addition, we used sensitivity analysis to test for heterogeneity and excluded relevant articles contributing to heterogeneity. If heterogeneity could not be excluded, a random effects model was used. A bias test is also required. P < 0.05 was considered statistically significant.

Subgroup analysis: No subgroup findings yet.

Sensitivity analysis: After deleting any one of the papers, the combined results of the remaining papers are not different from those without deletion, which means that sensitivity analysis has been passed.

Country(ies) involved: China.

Keywords: Early gastric cancer; Lymph node metastasis; Risk factor; Meta-analysis.

Contributions of each author:
Author 1 - Ailimulatijiang Yilihamu.
Author 2 - Ying Bin Cai.