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Original Article

Clinical utility of multi-row spiral CT in diagnosing hepatic nodular lesions, gastric cancer, and Crohn's disease: a comprehensive meta-analysis

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Abstract: A retrieval of relevant literature on hepatic nodular lesions, gastric cancer (GC), and Crohn's disease (CD) was conducted from Chinese and English databases. Meta-analysis was performed using Review Manager 5.4 software and the MIDAS package in Stata 18.0. Results from 11 studies comprising 1847 patients were synthesized. The pooled sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and diagnostic odds ratio with 95% confidence intervals were: 0.91 (0.84-0.95), 0.73 (0.65-0.79), 3.30 (2.60-4.30), 0.13 (0.07-0.23), and 26.00 (12.00-53.00), respectively. Significant statistical heterogeneity was found in sensitivity and specificity ($P<0.05$), with specificity heterogeneity originating from n, type, and mode ($P<0.05$). Sensitivity and specificity for n, type, object, and mode were non-heterogeneous ($P>0.05$). The combined AUC from SROC curve analysis of the 11 studies was 0.85. Deeks' funnel plot asymmetry test yielded a *p*-value of 0.01, indicating potential bias across studies in the diagnostic odds ratio funnel plot. Fagan's nomogram demonstrated that using CT for diagnostic modeling increased the post-test probability of correctly diagnosing hepatic nodular lesions, GC, and CD from 50.00% to 77.00%. Overall, multi-detector CT shows good diagnostic value for hepatic nodular lesions, GC, and CD, supporting its clinical flexibility based on patient-specific considerations.

Keywords: Multi-row spiral CT, hepatic nodular lesions, GC, CD, meta-analysis

Introduction

Hepatic nodules are pathological changes in liver tissue caused by fibrotic proliferation, closely associated with the occurrence and development of various liver diseases such as liver cysts, liver cancer, cirrhosis, and hepatic hemangiomas. Depending on the type of lesion, they are further classified as focal nodular hyperplasia (FNH), intrahepatic micro-nodules, etc [1]. Early examination using multi-row spiral CT is of significant value in improving the cure rate and survival rate of diseases associated with hepatic nodular lesions [2]. Gastric cancer (GC) is a malignant tumor originating from the epithelial cells of the gastric mucosa, predominantly adenocarcinoma. The pathological types are mostly adenocarcinomas, with a 5-year survival rate after surgery for stage I-II GC exceeding 90%; pre- and post-operative chemotherapy and radiotherapy can also achieve satisfactory palliative effects [3]. However, due to insufficient early screening rates and lack of targeted therapeutic measures, the 5-year survival rate after surgery for advanced GC has remained relatively low. Xu Q et al. [4] pointed out that radiomics analysis based on enhanced CT can assist in chemotherapy to reduce the pathological staging of advanced GC, thereby improving patients' quality of life and chemotherapy tolerance. Crohn's disease (CD) is a disease characterized by chronic inflammatory granulomas in the gastrointestinal tract, affecting the entire tract but primarily the terminal ileum and adjacent colon mucosa [5]. Lesions of CD exhibit segmental, skip distribution, with clinical symptoms mainly including diarrhea, abdominal pain, and weight loss. It is prone to relapse, has

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multiple complications, and often occurs concomitantly with immune-related diseases such as ankylosing spondylitis and cutaneous immune diseases, presenting symptoms similar to gastric cancer [6]. Therefore, the early diagnosis of CD is often confused with other inflammatory diseases. Clinical studies [7, 8] suggest that CT enterography, routine CT examination, dual-source CT enterography combined with X-ray barium meal have high sensitivity and accuracy in the differential diagnosis of CD, providing support for clinical control of the disease progression and symptom relief. Based on these findings, this study conducted a search and meta-analysis of literature on multi-row spiral CT in hepatic nodular lesions, GC, and CD in major databases, aiming to improve the early detection rate and prognosis determination of the diseases.

Materials and methods

Data source

By computer search from January 2004 to January 2024, relevant literature on the diagnosis of hepatic nodular lesions, gastric cancer, and Crohn's disease using multi-row spiral CT was retrieved. The search was conducted in the China National Knowledge Infrastructure (CNKI) and Wanfang Medical Database using keywords such as multi-row spiral CT, hepatic nodular lesions, gastric cancer, Crohn's disease, CT, CT enterography, enhanced CT, hepatic nodular lesions, etc. In PudWed, Web of Science, and Springer literature databases, search terms included CT, CTE, MSCT, in Liver Nodular Lesions, Gastric cancer, Advanced gastric cancer, Early gastric cancer, CD, Crohn's disease, etc.

Literature screening

Inclusion criteria: ① Literature published from January 2004 to January 2024 with study subjects exclusively Chinese population; ② Availability of CT examination data and confirmation of hepatic nodular lesions/GC/CD diagnosis through other examinations such as MRI, ultrasound, X-ray contrast, histopathology, gastrointestinal endoscopy, etc.; ③ Interval between imaging examinations and pathological examinations ≤1 month; ④ Non-recurrent patients after gastric cancer surgery or radiotherapy; ⑤ Patients providing informed consent for the study; ⑥ Literature providing direct or indirect extraction of true positive (TP), false positive (FP), true negative (TN), and false negative (FN) values.

Exclusion criteria: ① Meta-analyses, descriptive studies, case reports, theoretical reviews, personal experience summaries, animal experiments, conference papers; ② Lack of clear evaluation methods, gold standards; ③ Literature not from the aforementioned Chinese and English databases; ④ Unpublished or literature with academic copyright disputes; ⑤ Incomplete literature information, such as unidentified authors, unknown publication years, incomplete clinical and follow-up data, vague research methods, inability to access full text, etc.

Literature screening and data extraction

The retrieved literature titles were imported into the NoteExpress 3.2 literature search and management system, where duplicates were removed, and then the titles and abstracts were read to exclude low-quality literature. Subsequently, two researchers independently screened the literature and extracted data according to the inclusion and exclusion criteria. In case of disputes, consensus was reached through discussion, or a third party with higher clinical experience or professional qualifications was invited for judgment. The extracted data included: ① Basic information such as the first author, publication date, journal of publication, country, etc.; ② Basic information about the study subjects' sources, gender, age, quantity, disease-related conditions, etc.; ③ Study type, grouping method, research content and objectives, method design, observation indicators or evaluation criteria, research results, etc.; ④ Key factors influencing bias risk assessment.

Quality assessment

Two researchers independently assessed the quality of the included literature using the "Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2)" tool [9]. The evaluation criteria mainly included: ① Patient selection;

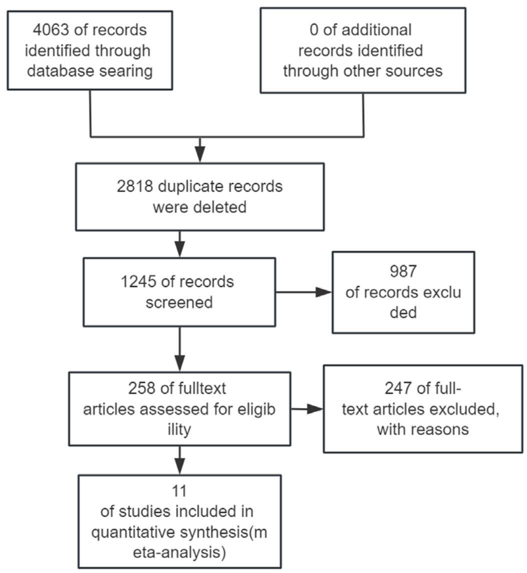

Figure 1. Literature search process.

② Evaluation of the diagnostic method; ③ Reference standard for case examination; ④ Flow and timing. The bias risk assessment results were summarized and graphed using Review Manager 5.4 software, with assessment levels categorized as 'low risk', 'high risk', or 'uncertain risk'.

Statistical analysis

We conducted meta-analysis using Review Manager 5.4 software and the MIDAS package in Stata 18.0. Heterogeneity was assessed using the Q-test and quantified with I^2. If there was no statistically significant heterogeneity among study results ($P>0.1$, $I^2 \leq 50\%$), we used a fixed-effects model to compute pooled effect estimates (OR and 95% CI). In cases of significant heterogeneity ($P \leq 0.1$, $I^2>50\%$), a random-effects model was employed. Z-tests were performed on combined OR values and 95% CIs, with significance set at $P<0.05$ indicating statistical significance across studies. Pooled effect estimates of sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio were presented using forest plots. Meta-regression analysis was conducted to explore sources of heterogeneity if significant heterogeneity was observed. Funnel plot analysis was performed when a sufficient number of studies were included to assess publication bias; otherwise, descriptive analysis of bias risk was conducted. The diagnostic value of CT in diagnosing hepatic nodular lesions, GC, and CD was predicted using summary receiver operating characteristic (SROC) curve analysis. Fagan's nomogram was used to analyze pre-test and post-test probabilities of CT diagnosis for hepatic nodular lesions, GC, and CD.

Results

Literature search results and process

After searching Chinese and English databases, a preliminary screening yielded 4063 relevant articles on the use of multi-row spiral CT for examining hepatic nodular lesions, GC, and CD. Duplicate removal using NoteExpress 3.2 literature search and management system reduced the count to 1245. Following a second screening based on title and abstract, 987 articles with low relevance or poor quality were excluded, leaving 258 articles. Finally, based on inclusion and exclusion criteria, 11 articles [10-20] were included, comprising 3 Chinese [10-12] and 8 English [13-20] publications (**Figure 1**).

The main data of included literature

The 11 included articles were published between 2006 and 2023, covering a total of 1847 patients. Among them, 5 articles [10-12, 14, 15] were prospective studies, while 6 articles [13, 16-20] were retrospective studies. Three articles [10-12] were related to hepatic nodular lesions, 4 articles [13-16] were related to GC, and 4 articles [17-20] were related to CD. The imaging modalities used in the studies varied: 3 articles [10, 13, 20] employed CT, 1 article [11] used CTHA + CTAP, 1 article [12] utilized CECT, 2 articles [14, 15] employed MSCT, 1 article [16] used CEUS + MSCT, 1 article [17] employed DECTE, 1 article [18] used APCT, and 1 article [19] used CTE (**Table 1**).

Assessment of literature quality and bias risk

Two studies [11, 20] did not describe case selection or design, thus assessed as 'uncertain risk'; all 11 studies accurately classified the targets with reference standards, and conducted the testing of trial indicators knowing the gold standard, hence evaluated as 'low risk'; two studies [17, 18] did not mention the

Table 1. Main data of included literature

Author	Year	n	Type	Object	Mode	TP	FP	TN	FN
Cao S et al. [10]	2023	153	Prospective study	Liver cancer + FNH	CT	50	44	48	11
Zhang JH et al. [11]	2006	76	Prospective study	Small nodular lesion of liver	CTHA + CTAP	52	2	15	7
Zou L et al. [12]	2021	60	Prospective study	Cirrhosis + microscopic nodules in the liver	CECT	38	6	12	4
Huang H et al. [13]	2022	171	Retrospective study	GC	CT	102	13	49	7
Sun J et al. [14]	2021	185	Prospective study	Gastric fundus cardia cancer	MSCT	141	2	15	27
Gai Q et al. [15]	2021	109	Prospective study	GC	MSCT	75	13	19	2
Liu Y et al. [16]	2021	150	Retrospective study	GC	CEUS + MSCT	116	7	23	4
Dane B et al. [17]	2022	23	Retrospective study	CD	DECTE	10	2	10	1
Kerner C et al. [18]	2012	648	Retrospective study	CD	APCT	188	106	220	134
Li X et al. [19]	2021	167	Retrospective study	CD	CTE	108	13	40	6
Gong T et al. [20]	2023	105	Retrospective study	CD, ITB	CT	70	7	23	5

FNH: Focal Nodular Hyperplasia; GC: Gastric cancer; CD: Crohn's disease; ITB: Intestinal tuberculosis; TP: True positive value; FP: False positive value; TN: True negative value; FN: False negative value; CTHA: Computed tomography hepatic arteriography; CTAP: Computed tomography portography; CECT: Contrast-enhanced computed tomography; MSCT: Multi-slice spiral computed tomography; CEUS: Contrast-enhanced ultrasound; DECTE: Dual-energy computed tomography enterography; APCT: Abdominopelvic computed tomography; CTE: Computed tomography enterography.

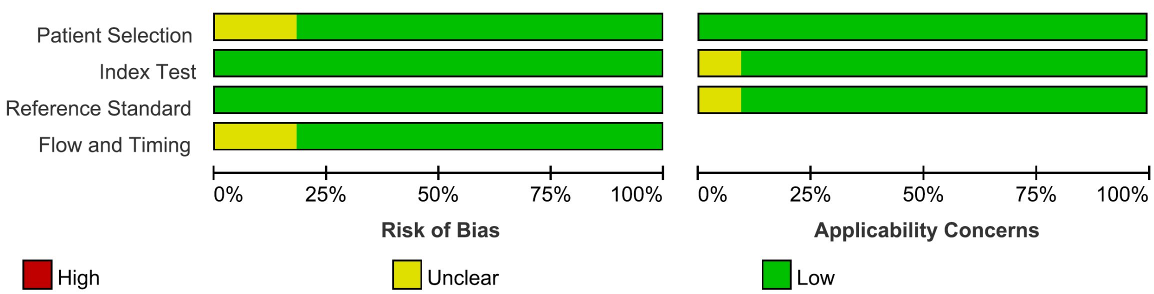

Figure 2. Assessment of literature quality and bias risk.

Table 2. Overall performance evaluation included in the literature

Parmeter	Estimate	95% CI
Sensitivity	0.91	0.84-0.95
Specificity	0.73	0.65-0.79
Positive Likelihood Ratio	3.30	2.60-4.30
Negative Likelihood Ratio	0.13	0.07-0.23
Diagnostic Odds Ratio	26.00	12.00-53.00

process of case inclusion, therefore evaluated as 'uncertain risk' (**Figure 2**).

Overall performance evaluation of included literature

The sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and odds ratio (OR) with 95% confidence intervals (CIs) for the 11 included studies were as follows: 0.91 (0.84-0.95), 0.73 (0.65-0.79), 3.30 (2.60-4.30), 0.13 (0.07-0.23), and 26.00 (12.00-53.00) (**Table 2**; **Figures 3** and **4**).

Sources of heterogeneity in meta-regression analysis

The sensitivity and specificity heterogeneity test results of the known combined effect size both showed significant statistical differences ($Q_{sensitivity}$=249.74, *P*=0.00, I^2=96.00; $Q_{specificity}$= 91.72, *P*=0.00, I^2=89.10). Meta-regression analysis was conducted to explore whether n (0: <100; 1: ≥100), type (0: non-prospective study; 1: prospective study), object (0: non-cancer; 1: cancer), and mode (0: non-standard CT; 1: standard CT) were sources of heterogeneity. The results showed that the specificity of n, type, and mode were all sources of heterogeneity (P<0.05); the sensitivity of n, type, object, mode, and the specificity of object were not sources of heterogeneity (P>0.05) (**Figure 5**).

SROC curve analysis

Through SROC curve analysis, the combined AUC of 11 studies was 0.85 (95% CI, 0.82-0.88), indicating good diagnostic value for

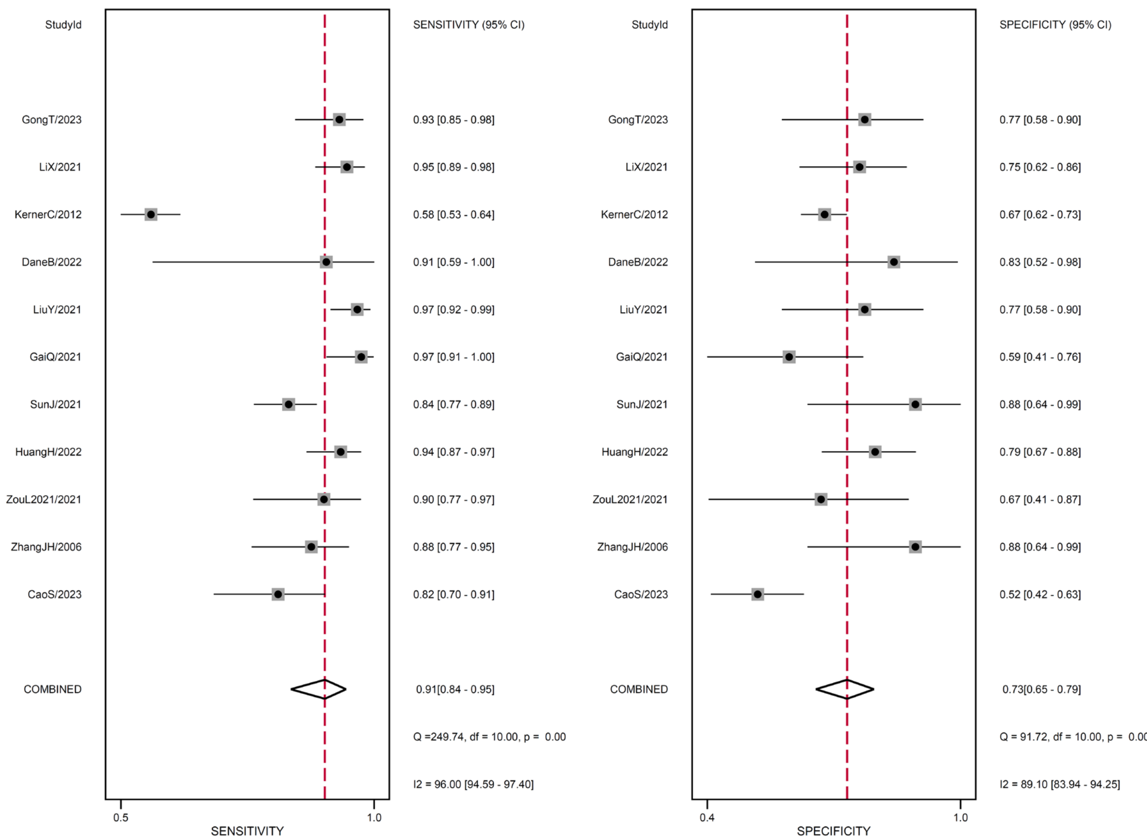

Figure 3. Forest plot of sensitivity and specificity for CT diagnosis of hepatic nodular lesions, GC, and CD.

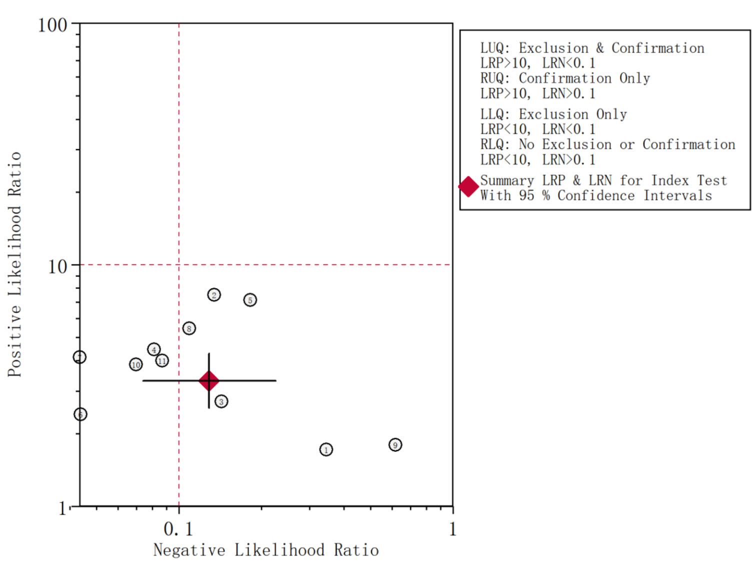

Figure 4. Scatter plot of positive and negative likelihood ratios for CT diagnosis of hepatic nodular lesions, GC, and CD.

hepatic nodular lesions, GC, and CD by CT (**Figure 6**).

Publication bias analysis

In the funnel plot of diagnostic odds ratios, Deeks' asymmetry test yielded a *p*-value of 0.01, indicating some degree of bias across studies, likely related to case selection and inclusion criteria (**Figure 7**).

Fagan's nomogram analysis

With a known positive likelihood ratio of 3.30 and negative likelihood ratio of 0.13, Fagan's nomogram analysis was conducted. The pre-specified prior probabilities (50%) were connected to the respective values of positive and negative likelihood ratios in the middle of the graph, intersecting with the posterior probabilities on the right, yielding the post-test probabilities for both posi-

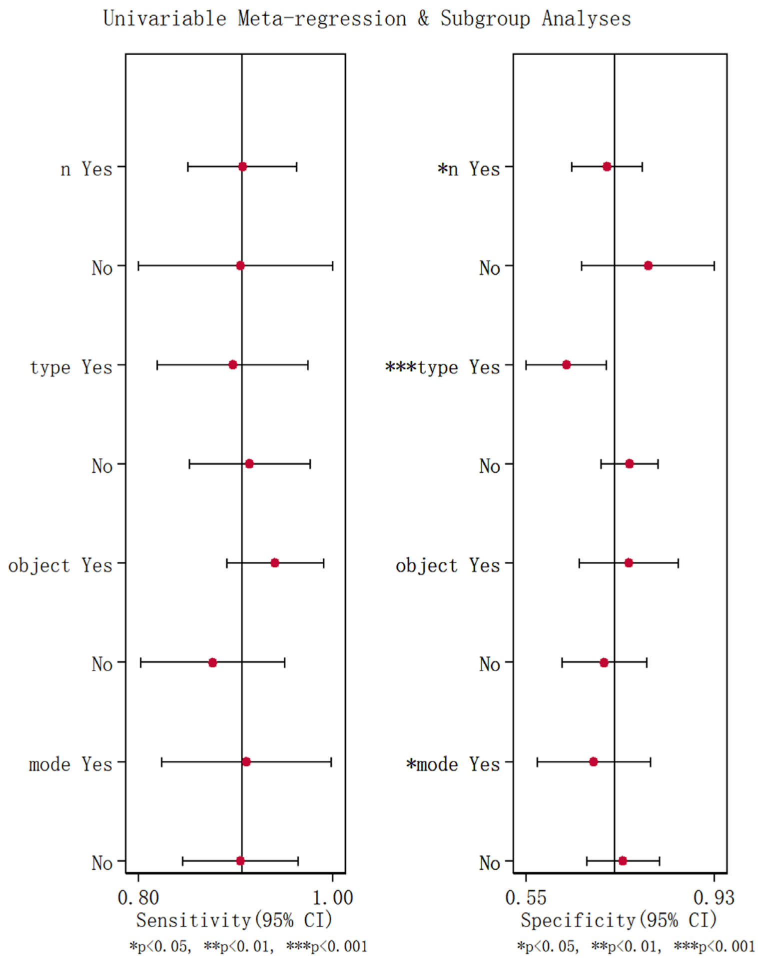

Figure 5. Sources of heterogeneity in meta-regression analysis.

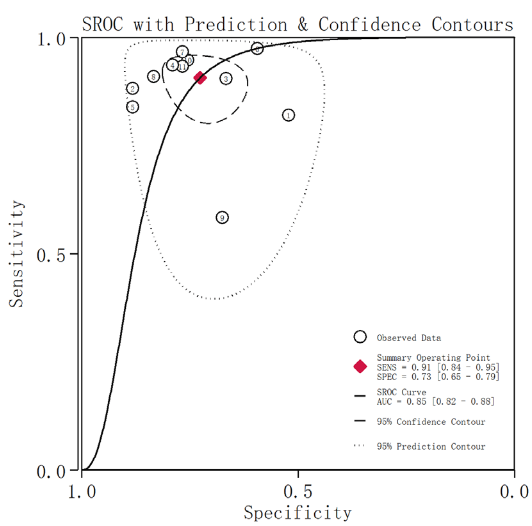

Figure 6. SROC curve for CT diagnosis of hepatic nodular lesions, GC, and CD.

tive and negative results. In other words, through CT modeling for the diagnosis of hepatic nodular lesions, GC, and CD, the probability of correctly diagnosing the disease increased from a prior probability of 50.00% to a posterior probability of 77.00% (**Figure 8**).

Discussion

CT is a common imaging technique widely used in the diagnosis, treatment, and prognosis assessment of various diseases such as tumors, digestive system disorders, and cardiovascular diseases [21]. However, due to the differences in density and thickness of tissues and organs in different parts of the body, clinical CT exhibits significant differences in sensitivity and specificity for different stages and types of diseases. Hepatic nodular lesions can be caused by various factors such as abnormal proliferation of liver cells, disruption of hepatic lobular structure, intrahepatic calcifications, malignant tumors, etc., resulting in diverse and complex imaging features, often requiring the combination of multiple methods to determine the nature of the nodules [22]. The CT manifestations of advanced-stage gastric cancer (GC) mainly include uneven thickening of the gastric wall, unclear border between normal gastric wall and lesion tissue, and intraluminal filling defects formed by contrast agents [23]. However, since the CT images of GC do not completely match the histological subtypes, improving the accuracy of CT in diagnosing the depth, extent of lesion infiltration, and lymph node metastasis to better guide clinical treatment has always been crucial for improving patient survival quality. The etiology of Crohn's disease (CD) is still unclear, and it cannot be completely cured at present. Due to delayed diagnosis and treatment, most patients often develop multiple lesions, intestinal

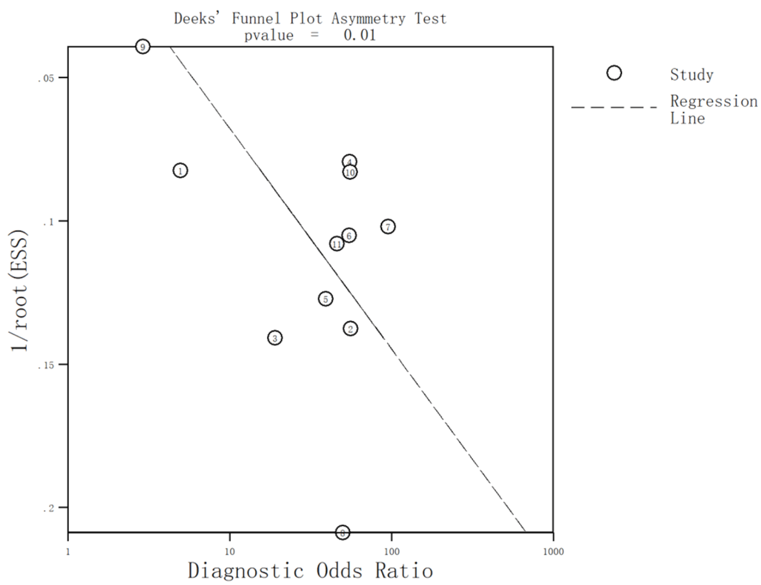

Figure 7. Funnel plot for CT diagnosis of hepatic nodular lesions, GC, and CD.

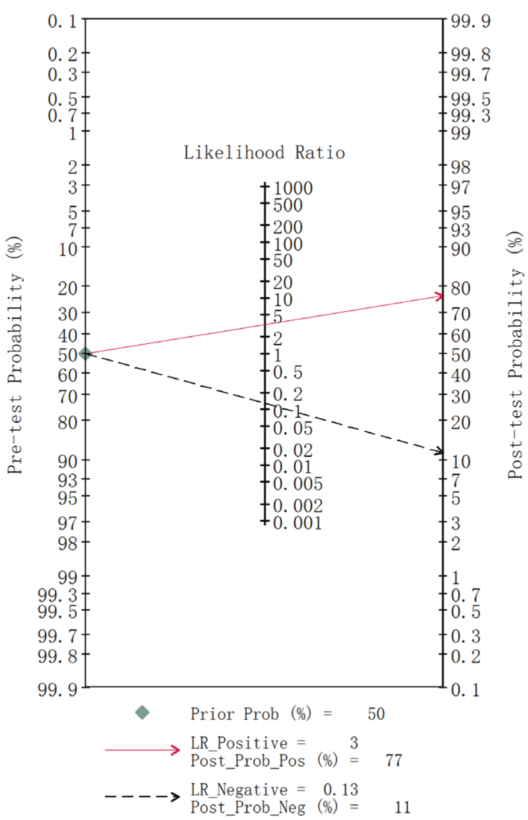

Figure 8. Fagan's nomogram analysis for CT diagnosis of hepatic nodular lesions, GC, and CD.

ulcers, and nutritional disorders [24]. Therefore, early diagnosis and standardized treatment are particularly important for controlling the symptoms of CD. This study conducted a diagnostic meta-analysis, ultimately including 11 articles, to summarize the diagnostic value of CT examination for hepatic nodular lesions, GC, and CD. The results confirmed that CT, through various modalities, can perform diagnostic analysis for these three diseases.

Multi-row helical CT diagnosis of hepatic nodular lesions

Hepatic nodular lesions can be categorized into benign and malignant lesions. The former are mainly seen in hepatic regenerative nodules, hepatic focal nodular hyperplasia (FNH), or hepatic adenomas, most of which have a good prognosis. However, a few cases may progress to liver cancer, necessitating regular CT or ultrasound follow-up to prevent and treat symptoms such as portal hypertension and hepatic discomfort [25]. Malignant lesions of hepatic nodules often occur in patients with liver cancer or premalignant lesions. Conventional CT has limited diagnostic value for these lesions, and early diagnosis primarily relies on other types of CT or MRI [26]. Among these, typical nodules typically show increased density, pseudocapsule formation, and an increase in number over a short period on contrast-enhanced CT, with a significantly higher detection rate than ultrasound [27]. However, in the forest plot analysis of this study, the sensitivity of CT examination for liver cancer plus FNH in literature 10 was 82%, with a specificity of only 52%. In literature 12, which used contrast-enhanced CT examination for cirrhosis plus intrahepatic small nodules, the sensitivity was 90% and specificity was 67%. It is evident that while CT has good sensitivity in diagnosing hepatic nodular lesions, its specificity is insufficient, which may reduce diagnostic accuracy and consequently affect early treatment for some patients. Xu et al. [28] compared the value of CT imaging, alpha-fetoprotein (AFP) level, and their combination, with pathological results as the gold standard. They found that

CT had a sensitivity of 91.7% in distinguishing liver cancer from hepatic FNH, with an accuracy of 81.3% for diagnosing hepatic FNH. When combined with AFP, the sensitivity for distinguishing liver cancer from hepatic FNH increased to 98.1%, with an accuracy of 89.1% for diagnosing hepatic FNH. Similarly, Şirli et al. [29] pointed out in their study that contrast-enhanced ultrasound had high sensitivity, specificity, and accuracy for FNH, while CT or MRI could serve as auxiliary methods to reduce the misdiagnosis rate of contrast-enhanced ultrasound. This suggests that for the diagnosis of hepatic nodular lesions, especially in those with malignant tendencies, multiple diagnostic approaches should be adopted, such as CT-guided percutaneous liver biopsy, CT + MRI, or CT + contrast-enhanced ultrasound, to improve the sensitivity, specificity, and accuracy of early diagnosis of hepatic nodular lesions and thereby control disease progression.

Multi-row helical CT diagnosis of gastric cancer (GC)

Early gastric cancer is limited to the mucosa and submucosa layers. Accurate imaging and histopathological diagnosis are of great significance in controlling the progression of gastric cancer and reducing the probability of lymph node metastasis [30, 31]. However, compared to advanced-stage gastric cancer, CT has lower detection rates and accuracy for early gastric cancer, and there are significant differences in the diagnostic rates for different histological types of gastric cancer. Endoscopy, as one of the main treatment modalities for early gastric cancer, whether it's endoscopic mucosal resection, resection, or image-enhanced analysis based on equipment, can provide effective support for pathological diagnosis and postoperative radiotherapy and chemotherapy [32]. Therefore, clinical practice often combines endoscopy with MSCT for the diagnosis of early gastric cancer. Guo et al. significantly increased the detection rate of suspected early gastric cancer cases through this approach, and the sensitivity, specificity, and accuracy were highest in consistency with pathological diagnosis [33]. In addition to endoscopic treatment, radical surgery for gastric cancer also has significant advantages in the treatment of this disease. However, peritoneal recurrence, as the main form of recurrence after radical gastrectomy for gastric cancer, often leads to early postoperative recurrence and low survival rates in patients, and enhancing individualized prediction has always been a major strategy to strengthen patient prognosis [34]. Sun et al. found that preoperative CT imaging could effectively predict peritoneal recurrence and chemotherapy response after gastric cancer surgery by comparing multiple quantitative features within and around the tumor, thus improving patient prognosis based on radiomic features [35]. Literature 13-16 sequentially studied CT examination of different tissue types of gastric cancer, gastric cardia cancer, gastric cancer T staging, and gastric cancer lymph node metastasis, with sensitivities and specificities of 94% and 79%, 84% and 88%, 97% and 59%, 97% and 77%, respectively. This indicates that the diagnostic value of CT varies throughout the progression and treatment process of gastric cancer, and appropriate diagnostic methods should be chosen based on the specific location and type of tumor occurrence.

Multi-row helical CT diagnosis of Crohn's disease (CD)

Current research suggests that the occurrence of Crohn's disease (CD) is associated with diet, environment, genetics, and other factors. For instance, long-term intake of spicy or greasy food can increase bile acid secretion and disrupt intestinal microbiota, or irritate gastrointestinal mucosa, thereby promoting the development of this disease. Additionally, the characteristics of disease occurrence vary significantly across different regions and ethnicities [36]. Research on this disease in China is relatively short, and it is not only easily confused with other intestinal diseases but also has a high recurrence rate one year after abscess drainage or resection of the affected intestinal segment. Although biologics, immunosuppressive agents, and thiopurine drugs can effectively relieve symptoms, there is still a lack of effective predictive indicators for intestinal damage and treatment efficacy evaluation in clinical practice [37, 38]. The "American Gastroenterological Association Consensus" points out that CT/MRI enterography can effectively establish a diagnostic model for CD, with no significant difference in consistency between CT and MRI [39]. Compared to gastrointestinal barium meal imaging and ultrasound examinations, dual-energy CT enterography (DECTE) can not only assist doctors in accurately assessing CD phenotypes, intestinal wall thickening and enhancement, and the degree of intestinal stenosis but also be used for analyzing the inflammatory activity and lesion activity of this disease or differentiating it from other intestinal diseases such as intestinal tuberculosis and ulcerative colitis [40]. Therefore, in this study, compared to other CT examination modes, DECTE demonstrated ideal sensitivity and specificity for diagnosing CD (91% and 83%, respectively), while abdominal-pelvic CT (APCT) showed the lowest sensitivity and specificity for diagnosing CD (58% and 67%, respectively). This is because APCT mainly determines the presence of intra-abdominal abscesses in CD patients, who often experience intestinal contents leaking due to intestinal perforation, leading to intra-abdominal infection and thereby affecting diagnostic accuracy.

Overall performance analysis of computed tomography diagnosis using multi-row spiral CT

The sensitivity and specificity of the combined analysis of 11 studies were 91% and 73%, respectively, with positive likelihood ratio, negative likelihood ratio, and diagnostic odds ratio of 3.30, 0.13, and 26.00, respectively. The area under the summary receiver operating characteristic curve (SROC AUC) was 0.85. This indicates a good overall performance of multi-row spiral computed tomography (MSCT) diagnosis. Meta-regression analysis revealed that the heterogeneity of specificity originated from the number of cases, study type, and examination method. This suggests that non-standard CT has higher value in terms of specificity, which can reduce the occurrence of misdiagnosis to some extent. Fagan's nomogram analysis demonstrated that by using CT to construct a model for the diagnosis of hepatic nodular lesions, gastric cancer (GC), and Crohn's disease (CD), the post-test probability could be increased from 50.00% to 77.00%. It is evident that conducting imaging studies primarily using CT can significantly improve the diagnostic accuracy of diseases. However, in a study on the preoperative TN staging of gastric cancer, Chen P.Q. et al. [41] found that although the use of CT axial images and axial combined multi-slice reconstruction images for TN staging of gastric cancer could effectively improve the accuracy of gastric cancer invasion depth (T staging), it had no significant impact on the accuracy of gastric cancer lymph node metastasis (N staging). Research by He J.J. et al. [42] also showed that MRI had higher sensitivity and specificity in diagnosing hepatic focal nodular hyperplasia (FNH) than CT, and the sensitivity and specificity of their combined diagnosis could both reach 100.00%. Meanwhile, as CD progresses, the intestinal mucosa is continuously eroded by inflammatory substances, and patients also develop uneven distribution of intestinal fibrosis. The cross-sectional imaging techniques of CT and MRI can effectively differentiate fibrosis, fistulas, and other intestinal stenotic lesions, with a combined sensitivity, specificity, and accuracy rate of over 80% [43]. Therefore, while multi-row spiral CT has high diagnostic value for hepatic nodular lesions, gastric cancer, and Crohn's disease, it may be insufficient for some more complex cases if CT examination alone is adopted.

Summary

Multi-row spiral CT demonstrates good diagnostic value for hepatic nodular lesions, gastric cancer (GC), and Crohn's disease (CD), allowing for flexible application in clinical practice based on individual patient conditions. However, with various types of CT available, it remains uncertain which mode is most suitable for widespread clinical adoption. Furthermore, the interpretation of CT findings primarily relies on changes in tissue structure and lesion morphology, lacking uniform and scientifically supported criteria for characterizing their nature. Especially in the staging of gastric cancer, achieving complete concordance between CT findings and pathological results remains challenging in clinical practice. Additionally, while non-standard CT may offer higher specificity and even superior sensitivity and accuracy in certain diseases compared to standard CT, its higher cost poses a significant barrier to patient accessibility. Therefore, future research should focus on developing more accurate, user-friendly, and cost-effective CT diagnostic technologies, along with the establishment of comprehensive CT imaging databases for various diseases.

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Disclosure of conflict of interest

None.

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