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THE ROLE OF THE INSTRUMENTAL EXAMINATIONS IN DIAGNOSTICS AND STAGING OF LOCALY DISTRIBUTED STOMACH CANCER

Referat. Introduction. The diagnostics and treatment of stomach cancer is still one of most complex and actual issue, despite of morbidity decreasing tendency.

Objective. Improvement of algorithm of diagnostics of patients with complicated stomach cancer.

Materials and methods. It was shown the analysis of results of surgical treatment of 418 patients with complicated stomach cancer, which got the hospital treatment at GI «V.T. Zaycev Institute of General and Urgent Surgery of NAMS of Ukraine» from 2010 till 2019, aged 29 till 76. Course of the disease was complicated with bleeding in 252 (60,3 %) case, with stenosis in 89 (21,3 %), with perforation in 15 (3,5 %), and with its combination — in 62 (14,8 %). Radical operations were performed in 168 (40,2 %) cases, palliative and symptomatic in 250 (59,8 %) — cases. 107 patients aging 36 till 73 were examined with SCT to revealing and staging of tumor.

Results. Patients were examined with using of combination of instrumental methods. SCT provides to detect the primary tumor, the process spreading, differentiation of tumor from the healthy tissues of stomach, local lymphatic nodal metastasis and other organs, that definite staging of pathology, volume of operation and further prognosis. SCT has precision of 95-97 % at detecting of cancer, definition of stage — 77-80 %. Endoscopy allows to define the location, spreading of process, sizes of tumor and presence of complications. Panoramic x-ray provide to detect the free air in abdomen, that is main symptom of perforation, but doesn't indicate the localization and root of perforation. Angiography allows to identify the sources of tumor's blood supply, and also continuing bleeding direct and indirect markers, that leads to conversion of diagnostics into curative. Bleeding vessel's embolization were performed in 7 cases as first treatment stage (the second one is operative), and in 11 cases as finishing curative method. There no any ideal oncomarker. Diagnostic precision of CA 72-4 is 28-80 % (40-46 % on the average). According to international guides [7], all patients were performed the diagnostic laparoscopy with researching of washout liquids of abdomen in uncertain cases.

Conclusion. Only complex examination of patients with stomach cancer with using combination of SCT of abdomen, FEGDS with biopsy, laparoscopy can provide total volume of examination, staging and surgical aid.

Keywords: *instrumental examination, staging of stomach cancer.*

Introduction

The diagnostics and treatment of stomach cancer is still one of most complex and actual issue, despite of morbidity decreasing tendency [1, 2, 3]. About 60-80 % of patients are hospitalized with advanced illness with presence of heavy complications [2, 4]. During many years the Endoscopy is still the basic examination of stomach cancer. The basic deficiency of it is absence of ability to estimate tumor spreading aboard the stomach and of presence lymphatic nodular defeating that made to providing the spiral computer tomography(SCT) in clinical practice. Although, besides optimistic views on

SCT ability [4], there are quite discreet views [3]. Systematization and classification of tomographic semiotics of locally distributed stomach cancer, detalization of invasive degree are demanded [1].

Objective

Improvement of algorithm of diagnostics of patients with complicated stomach cancer.

Materials and methods

Work based on results of surgical treatment of 418 patients with complicated locally distributed stomach cancer, which got the hospital treatment



at GI «V.T. Zaycev Institute of General and Urgent Surgery of NAMS of Ukraine» from 2010 till 2019, aged 29 till 76. Course of the disease was complicated with bleeding in 252 (60,3 %) case, with stenosis in 89 (21,3 %), with perforation in 15 (3,5 %), and with its combination — in 62 (14,8 %). Radical operations were performed in 168 (40,2 %) cases, palliative and symptomatic in 250 (59,8 %) — cases. 107 patients aging 36 till 73 were examined with SCT to revealing and staging of tumor. Male 244 (58,3 %), female — 174 (41,7 %).

It was shown the analysis of diagnostic accuracy and specificity of the SCT method in diagnostics of locally distributed stomach cancer. The diagnostic accuracy of the given task was considered the percentage of real tumor invasion in neighboring organs according to the research of histological preparations of removed organs among the total number of patients, who suffered combined operations. Specificity of the method of SCT was estimated as a ratio between the number of true tumor invasion in neighboring organs and the number of patients with paratumorose inflammatory infiltration according to the histological study of the micropreparations.

In order to study the possibilities of SCT in diagnostics and staging of primary tumor we tested 107 patients aged 36 to 73 years (men — 69, women — 38). The study included patients with tumor localization in different parts of the stomach (cardial — 8 patients, stomach body — 39, antral part — 33, subtotal stomach damage — 16, total impact — 11).

Results and discussion

We had data on the presence of malignant tumor of the stomach and its localization in the organ, performing the SCT of the abdomen cavity which were confirmed by the histological research. In order to determine the sensitivity of the SCT method, a comparison of the results of the studies with the data of the pre-operative FEGDS was carried out. The results are shown in Table 1.

Table 1
Sensitivity of the CT method compared with FEGDS in patients with locally distributed stomach cancer

Stomach parts (patients quantity)	FEGDS data	Sensitivity, %	SCT data	Sensitivity, %
Cardial part (8)	7	87,5	9	88,8
Body (21)	23	91,3	22	95,4
Body + cardinal (7)	5	71,4	6	85,7
Body+antral (26)	24	92,3	27	96,2
Antral (18)	19	94,7	17	94,4
Subtotal damage (16)	18	88,8	15	93,7
Total damage (11)	11	100	11	100
Total / Medial sensitivity	107	89,4	107	93,4

We developed diagnostic criteria and SCT-semiotics of local invasion of stomach cancer. The status of the initial tumor T4 was diagnosed by us on the basis of the following symptoms: 1) the symptom of the angular formations on the external contour of

the stomach in the zone of tumor damage; 2) the symptom of the paragastral cellular infiltration; 3) the symptom of the absence of the hypotensive cellular layer between the stomach and walls of neighboring organs; 4) the thickness of the wall of the neighboring organs; 5) presence of tissue component in neighboring organs, structure change and contrast characteristics of organs at the level of stomach tumor's invasion. The frequency of detection of these symptoms in the studied patients is shown in Table 2.

Table 2

Semiotic of local distributed stomach cancer according to the SCT

Symptom	Status T	Patients quantity	Detection percentage, %
The thickness of the stomach wall, presence of angular formations	T3, T4	105	98,1
The symptom of the paragastral cellular infiltration	T3, T4	104	97,1
The symptom of the absence of the hypotensive cellular layer between the stomach and walls of neighboring organs	T4	106	99,1
The thickness of the wall of the neighboring organs	T4	102	95,3
Presence of tissue component in neighboring organs, structure change	T4	98	91,5

The most reliable symptom, pointing to the presence of local common stomach cancer, was a symptom of the absence of a hypotensive cellular layer between the stomach and neighboring organs, which was found in 99,1 % of patients.

In order to compare the results of SCT with the morphological situation in determining the status of T in 107 patients with cancer of the stomach, the study of operating preparations with determination of tumor invasion in neighboring organs and presence of tumor cells in the edge of resection was conducted. Depending on the results of morphological research of the removed samples, the analysis of the diagnostic accuracy and sensitivity of the method of SCT depending on the tumor location was carried out. The data is presented in Table 3.

In the group of investigated patients the results of SCT match with conclusions of histological spread of tumor in neighboring organs was marked in 89,7 %, thus accuracy of CT in diagnostics of stomach tumor distribution on neighboring organs was equal 89,7 %, specificity — 92,4 %. The maximum results of diagnostic characteristics regarding the penetration of the tumor of the stomach were measured for the colon — accuracy 94,3, specificity — 100 %; minimal — for the body and tail of the pancreas — accuracy 83,3 %, specificity — 88,0 %.

During the endoscopic examination the localization, prevalence, size of stomach tumors and complications were determined. An important element

Diagnostic accuracy and sensitivity of the SCT method in local distributed stomach cancer depending on the nature of tumor invasion

Nature of tumor invasion	Liver	Body, tail of pancreas	Head of pancreas	Colon	Totally
Patients quantity	6+3/1 (8)	30/5 (25)	33/3 (30)	35/2 (33)	107/11 (96)
Diagnostic accuracy	88,8 %	83,3 %	90,9 %	94,3 %	89,7 %
Diagnostic sensitivity	7/8 = 87,5 %	22/25 = 88,0 %	27/30 = 90,0 %	33/33 = 100 %	92,4 %

of the research is the fulfillment of tumor biopsy. The method of endoscopic hemostasis included the primary assessment of the source of bleeding, the endoscopic clipping of blood vessels, coagulation and crioinfluence, the irrigation with hemostatics of blood-bleeding tumors. Achievement of temporary endoscopic hemostasis in 36 (8,16 %) patients with continuing bleeding from the stomach tumor, which is allowed to conduct intensive pre-operative preparation with deferred operative intervention within 2 - 6 days after the hospitalization.

Panoramic X-ray of lungs is not a mandatory element of the examination of patients on stomach cancer, as according to protocols performed by the CT organs of the thorax. But the x-ray examination the abdominal cavity organs is still simple and extremely informative method of diagnostics in the diagnostics of urgent states at occurrence of perforation of stomach tumors.

An angiographic examination reveals sources of tumor blood supply, as well as direct and indirect signs of bleeding, which continues with the transition of the diagnostic stage into the therapeutic phase. Embolization of vessels that are highly blood-bleeding is performed in superselective regimes in pools of the left and right stomach arteries, stomach-gland and short arteries of the stomach, and in some cases after catheterization of vessels that live other organs, in which the tumor ingots.

The first stage of X-ray endovascular hemostasis was performed in 16 (3,8 %) patients, of whom 11 (2,6 %) it became an independant method of treatment (in 9 noted the absence of recurrent bleeding). It should be noted that this method was especially valuable for achieving hemostasis in patients of senile age with an expressed accompanying pathology at a high level of operational risk of performance of «open» operational couriments.

The ideal tumor marker for detecting stomach cancer hasn't yet been found. Ca 72-4 cancer marker of the stomach (carbon antigen 72-4, ca 72-4, tag 72) — high molecular glycoprotein, component of the surface of the epithelium, expressed by various carcinomas — thick intestines, lungs, egg, endometry, pancreas, stomach, breast. The diagnostic sensitivity of the CA 72-4 test for stomach cancer is 28-80 %, on average 40-46 %. The level of increase of CA 72-4 is correlated with the stage of disease. After a radical operation, the CA level 72-4

is normalized (3-4 tiges). This marker has a greater sensitivity to recurrent stomach cancer compared to A RIVER or SA 19-9. The combination of all these tests increases diagnostic sensitivity and specificity of testing.

The advantages of SCT in comparison with other methods of visualization with contrast detailing, are the higher possibility to get in a short time a large number of transverse projections, which is especially valuable for localization of the region, from which in the future sample of tissue for biopsy, as well as for planning surgical intervention and next radiotherapy. The limitation of the SCT method in internal organ studies is the lack of the ability to obtain images from large areas in the long and frontal projections. This shortcoming can be overcome by using special contrast agents during the study.

Ultrasound examination allows to receive various (not only standard transverse) projection of body cross, to observe mechanical movements of organs (pulsation of vessels, intestinal peristalsis, respiratory excursions of diaphragms, kidneys, liver, and so on), there is no need to use artificial contrast substances.

Endoscopy ultrasound is widely used for estimation of the submucose spread of stomach tumor. But at large, subtotal stomach damage with spread to the surrounding organs, the diagnostic accuracy of the method decreases [6].

Radical operations were performed in 199 (47,6 %) patients; in 219 (52,4 %) - paliative and symptomatic (of them in 201 (48,0 %) — cavernous). Postoperative complications appeared in 131 patients (31,3 %), postoperative mortality made 7,9 % (33 patients).

Conclusions

Thus, only comprehensive examination of cancer patients with the use of SCT of the abdominal cavity, FEGDS with biopsy, performance of laparoscopy can provide a full volume of examinations, staging and full volume of the rendered aid. SCT based on clear identification of the symptoms allows to determine with high accuracy the extent of the spread of the stomach cancer to its wall, allows to diagnose the status of T, to determine the character of local spread of tumor, which opens further prospects in the performance of radical operational reconstructive and restoration operations with local distributed stomach cancer.



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РОЛЬ
ІНСТРУМЕНТАЛЬНИХ
ДОСЛІДЖЕНЬ У
ДІАГНОСТИЦІ
ТА СТАДІЮВАННІ
МІСЦЕВО-ПОШИРЕНОГО
РАКА ШЛУНКУ

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Резюме. *Мета дослідження:* вдосконалення діагностичного алгоритму у хворих на ускладнений місцево-поширений рак шлунку.

Матеріали та методи. Робота базується на аналізі результатів лікування 418 хворих на ускладнений місцево-розповсюджений рак шлунку, які перебували на лікуванні у «ДУ Інститут загальної та невідкладної хірургії ім. В.Т. Зайцева НАМН України» з 2010 по 2019 р., у віці від 29 до 76 років.

Результати та обговорення. СКТ дозволяє на високому рівні виявити первинну пухлину, поширення процесу, допомагає визначити ступінь малігнізації процесу, виявити метастази в регіонарні лімфатичні вузли та інші органи, що має значення при визначенні стадії процесу, обсягу оперативного втручання і подальшого прогнозу. Точність методу при виявленні раку становить 95–97 %, точність визначення стадії пухлини — 77–80 %.

При ендоскопічному дослідженні визначається локалізація, розповсюдженість, розміри пухлини шлунку та наявність ускладнень. Важливим елементом дослідження є виконання біопсії пухлини.

Ангіографічне дослідження дозволяє виявити джерела кровопостачання пухлини, а також прямі та непрямі ознаки кровотечі, що триває, з переходом діагностичного етапу в лікувальний. Ідеального онкомаркера для виявлення рака шлунку поки не знайдено. Діагностична чутливість тесту СА 72–4 для рака шлунку становить 28–80 %, в середньому 40–46 %. У відповідності до міжнародних рекомендацій всім хворим виконували діагностичну лапароскопію з цитологічним дослідженням змивів черевної порожнини.

Висновок. Тільки комплексне обстеження хворих на рак шлунку з використанням СКТ, ФЕГДС з біопсією, лапароскопії може забезпечити повний обсяг обстеження, стадіювання та належний об'єм наданої допомоги.

Ключові слова: *інструментальні дослідження, стадіювання рака шлунку.*