

IMPORTANCE OF GASTROSCOPY IN DIAGNOSIS OF MALIGNANT GASTRIC DISEASES

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Gastric cancer is the one of the most frequent neoplasms of gastrointestinal tract.

Regarding distribution, there is a rare incidence in people under 30, about 10% of patients are under 50; the average mean of patients is between 55 and 65 years. Males suffer more from this disease than females - 2:1 proportionally.

The aim of this paper is to establish the importance of gastroscopy as a reliable method for gastric cancer diagnosis as well as to establish the importance of specific parameters (sex, macroscopic result) on survival of patients.

This is a retrospective-prospective study. The study included 70 patients with gastric cancer or adenocancer diagnosis. The diagnosis was verified by gastroscopy and pathohistological result.

Gastroscopy is a reliable method for gastric cancer diagnosis because early diagnosis is of great importance for survival of these patients. Tumor size, lymphnodaly status and pathohistological results are of great importance for the type of operative procedure to be applied and metastasis as well. Radical lymphodenectomy with total or subtotal gastrectomy increases the survival rate. *Acta Medica Medianae 2009;48(4): 10-16.*

Key words: gastroscopy, gastric cancer

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Introduction

Gastric cancer is the most frequent malignant neoplasm of the gastrointestinal tract. Regarding distribution, there is a rare incidence in people under 30, about 10% of patients are under 50, and the average age of patients is between 55 and 65 years. Males suffer more from this disease than females in proportion 2:1 (1).

In countries such as the US, Japan, Austria gastric cancer is the most frequent type of digestive tract cancer (1).

Ethiology of this disease is diverse: eating habits, place of living, genetic factors, socio-economic status of a patient, H. Pylori infection (2).

Chronical atrophic gastritis together with intestinal metaplasia is a predisposition for gastric cancer development. Topographical frequency of gastric cancer coincides with the area of the highest frequency of atrophical gastritis and intestinal metaplasia. Antrum and lower part of the corpus are places where atrophic progression and intestinalisations during well-known 'pylorocardial expansion of chronical gastritis' are spread. Total displasia is of the lowest risk for gastric cancer development considering the fact that incomplete forms of

metaplasia (type III) are closely related to cancer. Studies carried out by Filipe, Munoz and Matko in Slovenia, comparing some types of intestinal metaplasia, revealed that the type III of intestinal metaplasia in comparison to types I and II bears only 2.7 to 5.8 times greater risk for gastric cancer development; the experience of other high risk countries such as Japan and Columbia also draws attention to genetic characteristics of type III of intestinal metaplasia (2,3,4).

On the other hand, anaplastic, mainly infiltratively growing cancers malignantly alter malignant mutation in reproductive segments of gastric glands and not by chronical atrophic gastritis allied with IM (intestinal metaplasia) (2,3,4).

Genuine neoplastic polyps, adenomas indicate pre-cancerous state. Hyperplastic ('regenerative polyps' and 'hyperplasiogenic') polyps as well as hamartomatous polyps can also alter malignantly (2,3,4).

Chronical peptic ulcer and cancer may be present in the stomach and in the same zone of atrophic gastritis and intestinal metaplasia. In order to differentiate peptic ulcer from cancer, an endoscopist must take multiple biopsies in a systematic way from all quadrants, especially from proliferative part of ulceration (2).

Epithelial displasia in the zone of chronical atrophic gastritis and intestinal-metaplastic gastric mucous membrane is an important occurrence whose stage should be specified; it can be graded as light, medium-heavy and heavy displasia. While in other organs, heavy displasia

has the stage of *in situ* cancer, Morson debates whether this term can be applied to gastric mucous membrane changes. Japanese authors have discovered that 'intramucous cancer' is a more adequate term. To this end, it has been recommended not to use the term 'cancer in situ', because it does not correspond with specific histological changes (2).

In patients with pernicious anemia the occurrence of adenomatous, neoplastic polyps and gastric cancer has been noticed 3-4 times more often than in the rest of the population, in both corpus and fundus, that is, places in the stomach where atrophic mucous membrane with intestinal metaplasia is situated, as opposed to antral and pilorous locality of the primal gastric cancer without accompanying pernicious anemia (2).

Gastroscopy-malignant lesion has the look of irregular ulcerous lesion whose bottom is brownish upon endoscopic examination, edges are sapped and irregular, the surrounding tissue has pseudopolypoidal infiltration and whose mucous membrane is inflexible (5).

AIMS

1. To establish the importance of gastroscopy as a reliable method for gastric cancer diagnosis.
2. To establish the importance of specific factors (sex, macroscopic result)
3. To prove that endoscopic result along with intraoperative result establishes the type and length of cancer operation.

MATERIALS AND METHODS

In this research 70 patients were examined and they all had cancer or adenocarcinoma diagnosed after gastroscopy and pathohistological verification. Thirty-eight of them underwent radical operation (total or subtotal gastrectomy) with systematic lymphadenectomy, 15 of them underwent palliative operation for health improvement and 15 underwent explorative laparotomy for the final diagnosis set and possible palliative operation, while 2 patients died as a result of generally bad health condition after both endoscopic and pathohistological diagnosis was made.

The data are retrospective-prospective, collected at Health Care Centre Čačak in Čačak (Serbia) for the period between 2003-2006.

The data comprised diagnostic standard for gastric cancer that included:

- medical history
- clinical examination
- lab analyses (blood count: HGB, HCT, MVC, Fe)
- stomach radiography
- gastroscopy with stomach biopsy and pathohistological verification (PH)
- digitorectal examination (cul de sac phenomenon)
- radiography of heart, lungs and bone system

It also included extended diagnostic level in clinical conditions; due to clinical evaluation, a minimum was added to the following:

- stomach endosonography
- ultrasound of abdomen, as well as scanner (CT) of the abdomen if necessary
- liver scintigraphy
- tumour markers (CA-50, CA-19-9)
- immunological status
- laparoscopy
- explorative laparotomy

QUESTIONNAIRE FOR MALIGNANT DISEASES

- Full name _____
- Gender _____
- Age _____
- Gastroscopy _____
- Disease staging (stage of a disease prior to operation-TNM classification used)

Stage of disease after operation

- Histological tumor type Diffuse
 - Intestinal
 - Unspecified
- Macroscopic tumor appearance:
 - I. Fungal form
 - II. Ulcerous form
 - II. Ulcerous-Infiltrative form
 - IV. Diffuse-Infiltrative form
- Lymphonodal status
- Operation type :
 - 1. Radical operation
 - 2. Palliative operation
 - 3. Explorative operation
- Resection type :
 - 1. Total gastrectomy
 - 2. Subtotal gastrectomy
- Outcome:
 - 1. Alive
 - 2. Dead

TNM Classification

T1-tumor invasion into mucous or submucous membrane, T2-tumor invasion into m. propria or subserous layer, T3-tumor penetration into serousis, T4-tumor invasion into surrounding structures. N0-no evidence of metastasis in the lymph node; N1-metastases in group 1 of lymph nodes, but there were no metastases in groups 2, 3 and 4; N2-metastases in group 2 of the lymph nodes, but there were no metastases in lymph nodes of groups 3 and 4, N3-metastases in groups 3 of lymph nodes, but there are no metastases in lymph nodes of group 4, N4-metastases in lymph nodes of group 4 P0-no peritoneal metastases; P1- metastases in the surrounding peritoneum, but there were no metastases in further peritoneum; P2-a few metastases in distant peritoneum; P3-numerous metastases in distant peritoneum. Surrounding peritoneum: Peritoneum of smaller pouch and smaller and larger omentum.

H0-no liver metastases; H1-metastases limited to one lobe, H1 (dex)-metastases limited to the right lobe, H1 (sin)-metastases limited to the left lobe; H2-a few metastases in both lobes; H3- numerous metastases in both lobes

M0-no distant metastases except peritoneal and liver metastases

M1-distant metastases except peritoneal or liver metastases

M1 category were specified according to the following markers:

Brain (BRA), Bone marrow (MAR), Menings (MEN), Bones (OSS), Pleura (PLE), Lungs (PUL), Skin (SKI), others (OTH).

Statistic methodology

The obtained data were processed and put into tables following discussion, depending on the nature of the examined features.

The description of numerical marks in this paper was done with classical methods of descriptive statistics with arithmetic mean and standard deviation and with minimum and maximum value. Also, frequency distributions of certain classes within the examined feature were represented.

For the purpose of analysing results and depending on the nature of the examined features, Pyrson's hi square test was used in the form of compliance tests and contingency tables, to compare the difference between frequencies with non-parametric features, for one or two features. For numerical limitations tables 2 times 2, Fisher's test of percise probability was applied.

In all analytical methods applied, the level of importance was <0.05 .

The program of the Institute at Department for Medical Statistics and Informatics of the University of Belgrade Medical Shool was used for bases building and data processing.

Results

In our work 70 patients with gastric cancer were examined.

In Table 1. the main socio-epidemiological facts of the patients are showed. The examination time was 8.5 months on average; average age of the examined patients was about 65 years.

Analysis of frequency regarding sex showed a statistically significant difference ($\chi^2=7.684$; $df=1$; $p<0.01$), because there were more male patients in our study (in proportion to female patients 2.5:1).

In Table 2. frequency of patients in relation to tumor locality and metastases presence is showed. Analysis of frequency of patients regarding tumor locality showed a statistically important significant difference ($\chi^2=8.112$; $df=3$; $p<0.01$), because there were far more patients with tumor in antro-piloric part of the stomach in comparison to other body parts.

Analysis of frequency of patients regarding presence of cancer metastases showed a

statistically significant difference ($\chi^2=14.347$; $df=1$; $p<0.01$), because there were far more patients with metastasis diagnosed in comparison to other results (comprizing about 86% of the results).

Table 1. Main socio-epidemiological study facts

Parametres	N	Min	Max	Median	SD
Age (years)	70	42,00	86,00	65,10	10,99
Examination time (days)	70	5,00	730,00	259,08	69,91
Sex		N	%		
Male		50	71,4		
Female		20	28,6		
Total		70	100,0		

Table 2. Frequency of patients regarding tumor locality and metastases presence

Parametres		N	%
Locality	Regio antri et pylori	30	42,9
	Regio cardiae	11	15,7
	Regio pangastrica	10	14,3
	Regio corporis	19	27,1
	Total	70	100,0
Metastases		10	14,3
	Not present	60	85,7
	Present	70	100,0

Table 3. Frequency of patients according to macroscopic tumor look

Groups		N	%
Macroscopic tumor look	Ulcerous-infiltrative	31	44,3
	Diffuse-infiltrative	28	40,0
	Ulcerous	7	10,0
	Fungal form	4	5,7
	Total	70	100,0
	Ulcerous-infiltrative	31	44,3

Table 4. Frequency of patients according to T tumor classification before therapy

Groups		N	%
T tumor classification before therapy	T1	2	3,9
	T2	7	12,0
	T3	30	44,9
	T4	25	37,7
	Total	64	100,0

Table 5. Frequency of patients according to N tumor classification before therapy

Groups		N	%
N tumor classification before therapy	N0	11	16,7
	N1	27	40,9
	N2	9	13,6
	N3	18	27,3
	N4	1	1,5
	Total	66	100,0

Table 6. Frequency of patients according to P tumor classification before therapy

Groups		N	%
P tumor classification before therapy	P0	51	77,3
	P1	1	1,5
	P3	14	21,2
	Total	66	100,0

Table 7. Frequency of patients according to H tumor classification before therapy

Groups		N	%
H tumor classification before therapy	H0	52	78,8
	H1	3	4,5
	H3	11	16,7
	Total	66	100,0

Table 8. Frequency of patients according to M tumor classification before therapy

Groups		N	%
M tumor classification before therapy	M0	53	80,3
	M1	10	15,2
	M2	3	4,5
	Total	66	100,0

Table 9. Frequency of patients according to PH tumor result

Groups		N	%
Ph tumor result	Intestinal	42	61,8
	Diffuse	26	38,2
	Total	68	100,0

Table 10. Frequency of patients according to definite T tumor result

Groups		N	%
Definitive T tumor stage	T0	38	57,6
	T2	3	4,5
	T3	5	7,6
	T4	20	30,3
	Total	66	100,0

In Table 3. frequency of patients regarding macroscopic tumor appearance.

Analysis of distribution of our patients regarding macroscopic tumor appearance shows that there is statistically significant difference ($\chi^2=12.677$; $df=3$; $p<0.01$), and this is because there were far more patients with ulcerous and diffuse-infiltrative types in comparison to other results (they add up to 85% of the results).

In Table 4, frequency of patients according to T tumor classification before therapy is showed. Analysis of frequency of our patients according to T tumor classification before therapy showed a statistically significant difference ($\chi^2=8.342$; $df=3$; $p<0.01$), because there were far more patients with T result 3 and 4 in comparison to other results (comprizing about 82% of the results). It is interesting that T0 classi-

fication was not found in our group. In Table 5, frequency of patients according to N tumor classification before therapy is showed. Analysis of frequency of patients according to N tumor classification before therapy showed a statistically significant difference ($\chi^2=11.049$; $df=4$; $p<0.01$), because there were far more patients with N result 0 and 1 in comparison to other results (these two stages comprize about 58% of the results).

In table 6, frequency of patients according to P tumor classification before therapy is showed. Analysis of frequency of patients according to the result of P tumor classification before therapy shows a statistically significant difference ($\chi^2=23.648$; $df=2$; $p<0.01$), because there were far more patients with P result 0 and 3 in comparison to other results (these two stages comprize about 98% of the results). There were no patients with P2 stage.

In Table 7, frequency of patients according to H tumor classification before therapy is showed. Analysis of frequency of patients according to the result of H tumor classification before therapy shows a statistically significant difference ($\chi^2=22.944$; $df=2$; $p<0.01$), because there were far more patients with H result 0 and 3 in comparison to other results (these two about 95% of the results). There were no patients with H2 stage.

In Table 8, frequency of patients according to M tumor classification before therapy is showed. Analysis of frequency of patients according to the result of M tumor classification before therapy showed a statistically significant difference ($\chi^2=24.014$; $df=2$; $p<0.01$), and there were far more patients with M result 0 and 1 in comparison to other results (these two stages comprize about 95% of the results).

In Table 9, frequency of patients according to PH tumor result is showed. Analysis of frequency of patients according to PH tumor result showed a statistically significant difference ($\chi^2=4.628$; $df=1$; $p<0.05$), because there were far more patients with intestinal tumor in comparison to diffuse.

In Table 10, frequency of patients according to definite T tumor result is showed. Analysis of frequency of patients according to definite result of T tumor classification shows a statistically significant difference ($\chi^2=13.074$; $df=3$; $p<0.01$), because there were far more patients with T result 0 and 4 in comparison to other results (these two stages comprize about 88% of the results). It is interesting that T1 classification was not found in our group.

In Table 11, frequency of patients according to definite N tumor classification is showed. Analysis of frequency of patients according to definite result of N tumor classification shows a statistically significant difference ($\chi^2=12.884$; $df=4$; $p<0.01$), because there were far more patients with N result 0 and 3 in comparison to other results (these two stages comprize about 81% of the results).

Table 11. Frequency of patients according to definite N tumor classification

Groups		N	%
Definitive N tumor stage	N0	37	56,1
	N1	7	10,6
	N2	5	7,6
	N3	16	24,2
	N4	1	1,5
Total		66	100,0

Table 12. Frequency of patients according to definite P tumor classification

Groups		N	%
Definitive P tumor stage	P0	51	77,3
	P1	2	3,0
	P3	13	19,7
	Total	66	100,0

Table 13. Frequency of patients according to definite H tumor classification

Groups		N	%
Definitive H tumor stage	H0	52	78,8
	H1	2	3,0
	H3	12	18,2
	Total	66	100,0

Table 14. Frequency of patients according to definite M tumor classification

Groups		N	%
Definitive M tumor stage	0	57	86,4
	1	6	9,1
	2	3	4,5
	Total	66	100,0

Table 15. Frequency of patients regarding operation type and therapy outcome

Parametres		N	%
Operation type	Palliative	15	22,1
	Explorative laparotomy	15	22,1
	Radical	38	55,9
	Total	68	100,0
Therapy outcome		N	%
	Alive	26	37,1
	Dead	44	62,9
	Total	70	100,0

In Table 12, frequency of patients according to definite P tumor classification is showed. Analysis of frequency of patients according to definite result of P tumor classification shows a statistically significant difference ($\chi^2=12.884$; $df=4$; $p<0.01$), because there were far more patients with P result 0 and 3 in comparison to other results (these two stages comprize about 97% of the results).

In Table 13, frequency of patients according to definite result of H tumor classification is showed. Analysis of frequency of patients according

to definite result of H tumor classification shows a statistically significant difference ($\chi^2=12.884$; $df=4$; $p<0.01$), because there were far more patients with H result 0 and 3 in comparison to other results (these two stages comprize to about 97% of the results).

In Table 14, frequency of patients according to definite M tumor classification is showed. Analysis of frequency of patients according to definite result of P tumor classification shows a statistically significant difference ($\chi^2=12.884$; $df=4$; $p<0.01$), because there were far more patients with M stage 0 in comparison to other results (this stage comprize to about 87% of the results).

In Table 15, frequency of patients regarding type of tumor operation is showed. Analysis of distribution of patients regarding operation type used in tumor therapy shows a statistically significant difference ($\chi^2=6.375$; $df=2$; $p<0.01$), because there were far more patients who underwent radical operation in comparison to other results (this operation type comprizes to about 56% of the results).

Analysis of frequency of patients regarding therapy outcome shows a statistically significant difference ($\chi^2=4.997$; $df=1$; $p<0.05$), because there were far more patients who died in comparison to those who survived.

Discussion

Seventy patients with malignancies (cancer and adenocancer) were examined, 50 males and 20 females. This is a statistically significant difference, because of a larger number of male patients that is in accordance with corresponds to world literature (2,5).

In numerous examinations of cancers and adenocancers there was no statistically significant difference.

Examination of patients frequency regarding tumor locality (antro-piloric part, cardia region, pangastric region and corporal part) showed a statistically significant difference, due to the fact that there were far more patients with tumor in antro-piloric part of the stomach in comparison to other parts, that is in accordance with world data (3,4,5).

Frequency analysis of patients for macroscopic tumor occurrence showed a statistically significant difference, because there were far more patients with ulcerous-diffuse infiltrative type (6,7) in comparison to other results (they comprize about 85%) (3,4).

Frequency analysis of patients for tumor metastases' presence showed a statistically significant difference, because there were far more patients with metastasis in comparison to other results (positive comprize about 86% of the results) (1,3,4). This coincides with the fact that even the best organized services, such as Japan, discover early gastric cancer in 30% of the cases; this means that in most cases patients have already developed an advanced stage of gastric cancer prior to examination (2,3,4,6,8,9,10).

Frequency analysis of patients according to T tumor classification before therapy showed a statistically significant difference, because there were far more patients with T result 3 and 4 in comparison to other results 9 (these two stages comprise about 82% of the results). It is interesting that T0 tumor classification was not found in our group of patients.

Frequency analysis of patients according to N tumor classification before therapy showed that there was a statistically significant difference, because there were far more patients with N result 0 and 1 in comparison to other results 9 (these two stages comprise about 58% of the results).

Frequency analysis of patients according to P result of tumor classification before therapy showed a statistically significant difference, because there were far more patients with N result 0 and 3 in comparison to other results 9 (these two stages comprise about 98% of the results). There were no patients with P2 stage.

Frequency analysis of patients according to H result of tumor classification before therapy showed a statistically significant difference, because there were far more patients with H result 0 and 3 in comparison to other results 9 (these two stages comprise about 95% of the results). There were no patients with H2 stage.

Frequency analysis of patients according to M tumor result of classification before therapy showed a statistically significant difference, because there were far more patients with M result 0 and 1 in comparison to other results 9 (these two stages comprise about 95% of the results). There were no patients with H2 stage.

All the above mentioned facts show that even the best organized services discover early gastric cancer in 30% of cases (Japan), which means that patients have already developed an advanced stage of gastric cancer prior to examination (2,3,4,6,8,9,10).

Frequency analysis of patients according to PH tumor result showed a statistically significant difference, because there were far more patients with intestinal tumor in comparison to diffuse which is in accordance with data from literature (2,10).

Frequency analysis of patients according to definite result of T tumor classification before therapy showed a statistically significant difference, because there were far more patients with T result 0 and 4 in comparison to other results 9 (these two stages comprise about 88% of the results). It is interesting that T1 classification was not found in our group.

Frequency analysis of patients according to definite result of N tumor classification before therapy showed a statistically significant difference, because there were far more patients with N result 0 and 3 in comparison to other results 9

(these two stages comprise about 81% of the results).

Frequency analysis of patients according to definite result of P tumor classification before therapy showed a statistically highly significant difference, because there were far more patients with P result 0 and 3 in comparison to other results 9 (these two stages comprise about 97% of the results).

Frequency analysis of patients according to definite result of H tumor classification before therapy showed a statistically significant difference, because there were far more patients with H result 0 and 3 in comparison to other results 9 (these two stages comprise about 97% of the results).

Frequency analysis of patients according to definite result of M tumor classification before therapy showed a statistically significant difference, because there were far more patients with M result 0 in comparison to other results 9 (this stage comprise about 77% of the results).

Frequency analysis of patients regarding operation type used in tumor therapy showed a statistically significant difference, because there were far more patients who died in comparison to those who survived. All given data coincide with the fact that even the best organized services (Japan) discover early gastric cancer in 30% of the cases (2,3,4,6,8,9,10); as far as Europe is concerned the number is 10% (source from world literature) (2,3,4,6,8,9,10), which coincides with the fact that patients with malignant gastric disease come for examination at the advanced stage, and therefore with fewer possibilities for radical treatment resulting in the fatal outcome (5,7,11,12).

Conclusions

1. Gastroscopy is a reliable method for gastric cancer diagnosis.
2. Early gastric cancer diagnosis is of great importance for positive outcome in these patients.
3. Tumor size, as well as, pathological result and lymphonodal status have influence on radical operative treatment and further metastasis.
4. Application of radical lymphadenectomy with total or subtotal gastrectomy influence survival on the large scale expected in patients who are still being monitored at present, and who are generally in good health without signs of recidives.
5. Application of radical extensive lymphadenectomy increases the survival rate.
6. Finally, the importance of this study is to show how the Health Care Centre operates, and how it keeps up with world trends in this area of knowledge in majority of cases.

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ULOGA GASTROSKOPIJE U DIJAGNOSTICI MALIGNIH BOLESTI ŽELUCA

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Karcinom želuca je jedna od najčešćih malignih neoplazmi gastrointestinalnog trakta. Retko se nalazi kod osoba mlađih od 30 godina, oko 10% obolelih su osobe do 50 godina, srednji prosek obolevanja je između 55 i 65 godina. Češće obolevaju muškarci nego žene, u odnosu 2:1.

Cilj rada bio je da se utvrdi značaj gastrokopije kao suverene metode za dijagnostiku karcinoma želuca, kao i da se utvrdi značaj pojedinih faktora (pola, makroskopskog nalaza) na dužinu preživljavanja bolesnika.

Podaci su retrospektivno-prospektivni. U ovom radu je obrađivano 70 bolesnika, od kojih su svi imali dijagnostikovan karcinom ili adenokarcinom želuca, putem gastrokopije i sa patohistološkom verifikacijom. Od toga, 38 bolesnika je operisano radikalnom operacijom (totalnom ili subtotalnom gastrektomijom) sa sistemskom limfadenektomijom, kod 15 bolesnika je urađena palijativna operacija radi poboljšanja kvaliteta života a kod 15 bolesnika je urađena eksplorativna laparotomija radi postavljanja konačne dijagnoze i eventualne palijativne operacije, a dva bolesnika su umrli usled lošeg opšteg zdravstvenog stanja nakon postavljanja endoskopske i patohistološke dijagnoze.

Gastrokopija je suverena metoda dijagnostike karcinoma želuca, budući da je rana dijagnostika karcinoma želuca od najveće važnosti za povoljan ishod u preživljavanju ovih bolesnika.

Veličina tumora, limfonodalni status, kao i patohistološki nalaz, utiču na radikalnost operativnog lečenja i udaljene metastaze. Primena radikalne limfadenektomije sa totalnom i subtotalnom gastrektomijom povećava stopu preživljavanja kod bolesnika sa karcinomom želuca. *Acta Medica Medianae* 2009;48(4):10-16.

Ključne reči: gastrokopija, karcinom želuca