Upper Gastrointestinal Radiography Screening Assessment Manual

Introduction

Upper Gastrointestinal Radiography has achieved numerous successful results as the mainstream examination of gastric cancer screening for more than 50 years. In cancer screening as secondary prevention, in particular, only gastric cancer screening by radiography has been recommended as a population-based gastric cancer screening, based on evaluation on various aspects such as efficacy with mortality rate reduction effect as index, efficiency from the viewpoint of cost-benefit, and invested resource effectiveness, as well as safety and simplicity.[1]

Ever since it was called the Japanese Society of Gastric Mass-Screening (JSGMS), the Japanese Society of Gastrointestinal Cancer Screening (JSGCS) has pursued and intended improvement in the accuracy of gastrointestinal radiography by setting committees and working groups over several phases with various names, such as standard procedure, imaging standard, and imaging method. They first handled indirect radiography only, and then, in response to popularization and expansion of institutional gastric cancer screening, they reported guidelines for direct imaging in addition to indirect imaging in 2005.[2] The previous guideline of our society [3] was developed based on direct imaging specified in these guidelines of JSGMS (at that time).

Thereafter, in response to rapid popularization of digital devices and identification of concept of population-based screening versus opportunistic screening, JSGCS revised the classification of fluorography or film radiography to standard imaging divided into population-based and opportunistic ones in 2011.[4)] **This population-based standard imaging primarily aims at early detection of gastric cancer, whereas opportunistic imaging assumes institutional screening, such as health screening.**

Health screening aims at not only secondary prevention, but also primary prevention. In this context, upper gastrointestinal radiography in health screening is concurrently a cancer screening and health checkup procedure for the upper gastrointestinal tract, not only for the stomach but also for the esophagus to the descending part of duodenum.

Based on the current situation with improvement in imaging as described above and identification of gastric mucosal atrophy such as *H. pylori* gastritis as a high risk outcome of gastric cancer, the present manual has been prepared in pursuit of a desirable mode of gastrointestinal radiography as part of health screening.

Implementation of upper gastrointestinal radiography

1. Although various modes of upper gastrointestinal radiography may be possible, the imaging method and operation procedure will comply with those of the "Gastric Cancer Radiographic Screening Technical Sector Textbook 2011" [5)] published by Japan Quality Assurance Organization of Gastroenterological Cancer Screening (JQAOGCS) in terms of the purpose of health screening and accuracy control.

Target Organs

Esophagus, stomach, and duodenum (bulb and descending part)

- If the pharyngolaryngeal region or the duodenum below the transverse part is imaged with abnormal findings, it goes without saying that such images will also be interpreted and assessed.
- If any extra gastrointestinal abnormality is noted, record it and notify the subject of that as necessary, regardless of whether it is benign/malignant.
- Explain in advance that highly accurate radiography is available now, but accuracy at 100% is unavailable and accurate images are not always obtained. Also explain that cooperation between the subject and the radiological technician is necessary to obtain good images.

Contrast medium

As positive contrast medium, use about 150 mL of high concentration thin barium sulfate suspension at ≥200% w/v (herein after abbreviated as the medium). As the negative contrast medium, 5 g of the blowing agent is administered with a small amount of the medium or a water-diluted medium. Attention should be paid so as not to administer the blowing agent with too much water, because concentration of the medium or adherence of the medium to the gastric mucosa is lowered.

Pretreatment

There is less limitation in health screening performed under the provision of physicians, who are equipped with sufficient resources and staff than in gastric cancer mass screening. Therefore, a spasmolytic can be administered to reduce the flow of medium out or control gastric peristalsis. However, accidents and side effects due to the use of spasmolytics occur at a low but non-negligible incidence. In screening healthy individuals, risk by the examination itself should be reduced as much as possible, despite the screening being opportunistic.

Accordingly, spasmolytics should not be used without maximum preparation and precaution.

Positioning and number of images

The Standard Imaging Method (for opportunistic screening) in New Gastric Radiography Guidelines 2011 by JSGCS [4] shall be observed.

The order of the positions and their target sites are as follows:

Esophagus: 2 shots	
1) Upright and right anterior oblique position (upper)	The upper esophagus
2) Upright and right anterior oblique position (lower)	The lower esophagus to the gastric cardiac region
Stomach: 14 shots	
3) Supine position	The gastric body to the posterior wall of the prepylor

	us
4) Supine and right anterior oblique position	The greater curvature of the body to the lesser curvature of the prepylorus, a little to the posterior wall
5) Supine and left anterior oblique position	The posterior wall of the body a little to the lesser curvature, to the posterior wall of the prepylorus a little to the greater curvature
6) Prone position (head down tilt)	The middle body to the anterior wall of the prepylorus
7) Prone and left anterior oblique position (head down tilt)	The anterior wall of the middle body a little to the great curvature, to the anterior wall of the prepylorus a little to the lesser curvature
8) Prone and right anterior oblique position	The cardia region to the anterior wall of the upper stomach (upper body and fornix)
9) Right lateral position	The anterior and posterior wall of the cardiac region centering around the lesser curvature
10) Semi-supine and left anterior oblique position	The cardiac region to the posterior wall the upper body
11) Supine and left anterior oblique position (spreading medium)	The posterior wall of the upper body a little to the lesser curvature
12) Upright and right anterior oblique position	The posterior and anterior wall of the upper body a little to the greater curvature, and duodenal bulb
13-16) Upright position with compression	4 shots [body, angle, antrum, and pyloric region]

Although the Guidelines of 2005 excluded the upright filling image from 8 basic images for indirect radiography, they included this in 4 additional images for direct radiography along with esophageal and compressed images. However, the revised Guideline of 2011 removed the upright filling image from all 16 shots. It was considered that diagnostically significant filling image was difficult to take with a small amount of the medium and double contrast is sufficient for diagnosis, and the less important image was omitted from the limited number of images even in an indoor screening. However, although in a minority, some consider upright filling image to be necessary, because it can assess the whole shape of the stomach.

Points to be noted in radiography are the same as in the previous guideline.[3] It should always be borne in mind that operating as rapidly as possible is a more essential condition to obtain good images than streamlining screening. Particularly, if no spasmolytic is used, it is important that the radiological technician takes an attitude to make the subject relieved from the psychological tension in the examination room.

Each facility may add the original shots to the above 16 essential shots. It is reasonable to add necessary shots by the other position if they are not sufficient to depict findings capable of providing diagnosis. （前文と内容が似るため、うまく合わせると良いかもしれません）

Interpretation

Since mass screening is secondary prevention for early detection of cancer, two basic assessment categories are present: “thorough examination needed” and “no thorough examination needed.” However, if the examination is performed as part of health screening, a sort of multiphasic health check-up, elements of a health check-up should be added to specialized cancer screening.

That is to say, it needs to be a cancer screening, and at the same time, also needs to assess the health of the upper gastric tract itself. Merely picking up findings and guiding to endoscopy is not considered to be “interpretation.” Instead of merely assessing whether or not thorough examination is needed, giving meaning to significant findings to make radiological diagnosis can be considered as interpretation.

The present manual adopts a diagnostic/assessment category based on the premise that interpretation should further make qualitative diagnosis than gastric cancer mass screening would make.

Although some consider that the assessment of the background mucosa is also necessary, because it is desirable to make local diagnosis after diagnosing the background mucosa, such as gastric atrophy status, this will be left to each institution’s discretion.

Sites and locations in the gastric wall (Table 1)

The upper gastrointestinal sites are described with various terminologies, such as terminologies in the Japanese Classification of Cancer, anatomic terminologies of the sites, and the terminologies for endoscopy. Although each terminology has its own significance, the classification shown in the table has been adopted pursuant to the terminology commonly used in radiography.

- The esophagus is divided into three regions – upper, middle, and lower. The cervical esophagus is included in the upper esophagus, whereas the abdominal esophagus in the lower esophagus. However, other descriptions are also permitted if they are universal and allow retrospective comparison and consideration with radiograms.
- The cardiac region is an area in which the cardiac glands are distributed, in its basic histological meaning, but it is very difficult to image the histological cardiac gland region in a radiogram. Although an image with the medium favorably adhered to the mucosa indicates the esophagogastric junction in a wavy streak shadow, it is difficult to image with standard imaging.

  In the present manual, the esophageal cardiac region is defined to be the part within 2 cm adoral to the esophagogastric junction, His angle, or the extension from the adoral end of the vertical fold of the greater curvature along the gastric wall and the part within 2 cm distally is defined to be the gastric cardiac region.
- The term gastric fornix (fundus) is based on the fact that this region is the most dorsal in supine position. This site is radiologically defined to be the part above the horizontal line, extending from the lower end of the cardia (not cardiac region) to the greater curvature in general (excluding the cardiac region).

  The definition as the part above the “second gastric angle” is also acceptable, which is used in some institutions.
- Although the gastric corpus is definitely from the cardia to the gastric angle in the lesser curvature side, it is often indefinite in the greater curvature side for the region covered by the gastric corpus, with an ambiguous border with the greater curvature-side gastric angle region. The border between the corpus

and the gastric angle is basically defined based on the status of the fold and the mucosa (particularly in gastric areas). The gastric corpus is trisected into the upper, middle, and corpus regions in both greater and lesser curvature sides.

- The gastric angle region is a part that spreads to the greater curvature, including the gastric angle in a fan shape. The term gastric angle refers to the inflexion point between the corpus and the antrum part at which the stomach flexes. It should be noted that “gastric angle” and “gastric angle region” are different. The greater curvature-side gastric angle region is defined to be up to the adoral end of the pyloric antrum region. It spreads to the adoral and anal side centering on the opposite point of the gastric angle in the greater curvature in a fan shape.
- The antrum region spreads from the prepyloric region to the gastric angle, and the length in the greater curvature is the same as that in the lesser curvature.
- If the border between the gastric corpus region and the gastric angle region is unclear, the region from the border with the fundus to the border with the pyloric antrum region may be quadrisected into the upper corpus, middle corpus, lower corpus, and gastric angle region.
- The prepyloric region is defined to be the pylorus and the part up to about 2 cm adoral to it. The region is defined to be within about 2 cm width, similarly to the cardiac region, because the retraction ring is not always imaged clearly in radiograms, although it seems histologically appropriate to define the prepyloric region to be the part from the retraction ring to the pylorus.
- For the duodenum, some argue that the duodenal bulb and the postbulbar duodenum should be differentiated. However, because most duodenal diseases occur in the duodenal bulb and the superior duodenal angulus (SDA) or inferior duodenal angulus (IDA) is not always imaged clearly, postbulbar duodenum is not daringly defined here. Nevertheless, each institution may define the postbulbar duodenum ad libitum.

* It is assumed that consensus on classification among academic societies and organizations related to radiology will be complied with, for example among JSGCS, JQAOGCS, and the Japan Radiological Society (JRS), if such consensus is proposed.

Description of interpretation and assessment (Table 1-2, 3)

Technologist’s check field

It is essential for radiological technologists (hereinafter referred to as technologists) to improve their skills in order to obtain better images. Although some consider that participation of technologists in interpretation is inappropriate, the technologist who has taken the image just remarks the findings he/she considers significant. Check of findings in itself is not “interpretation” and not applicable to participation of the technologist in interpretation. Checks by the technologist, including observation under fluoroscopy, are not only favorable for the improvement of the technologist’s skill but also very useful for interpretation by the physician. Improvement in skill to check the imaged findings is directly linked to improvement in imaging technique.

Physicians interpret, taking into consideration the findings checked by technologists and the information under fluoroscopy, but this is not applicable to emergency cases, of course.

The technologist's check field may be prepared in each institution's own form, desirably in a form allowing the technologist to describe in free form. Although the present manual daringly shows an exemplary tabular form of the technologist's check field, this may be changed in each institution's own form.

Description of interpretation results by physician

Record of interpretation results is to identify the rationale leading to the assessment. Therefore, the interpretation result table presented here can absolutely be insufficient. Description should basically be accompanied by drawings (sketch or image marking). This is particularly essential in cases of assessment "C" or severer, in order to evaluate the change with time in the future. It is greatly useful to depict abnormal findings that cannot be expressed sufficiently in a table, such as record of their detailed shape and size, in order to improve interpretation skill.

In preparing a request form for thorough examination (referral form), the findings need to indicate clearly what disease is suspected and to what degree in the referral, and such information can usually not be provided sufficiently in text form.

Although an exemplary Interpretation Report Table is presented here, this is only an example and each institution may prepare its own forms, as long as such forms provide interpretation results in addition to findings and disease terms presented in the present manual.

It is also acceptable that description schema of findings is defined in advance, from which physicians mark the applicable codes of findings within the list, with the aim of fostering physicians to read images.

Findings (Table 2)

It would still be difficult to say that terminologies for findings obtained in upper gastrointestinal radiography are unified, particularly for detailed and minute findings. In addition, different expressions may often be used even for the same findings. In such a context, the present manual adopts expressions with few differences among researchers and terms considered to be established and popular to a certain degree in history.

Additionally, with the aim to avoid misuse of terms that are sometimes encountered, marginal findings and gastric mucosal fold findings are differentiated from each other, just as rough categories and direct findings such as niche and shadow defect are differentiated from each other.

Although the basics have been established in the over-50-year-history of gastric diagnostic radiology, expression or diagnostics for detailed findings (minute convexo-concave in the mucosa or disturbed marginal ridge line) has not been finalized yet. Therefore, no finding more detailed than the above is daringly presented here.

Interpretation, diagnosis, and assessment (Table 3)

Assessment table

Assessments and assessment categories are listed in two forms: Table A and B. It is more desirable to use Table B in view of the context of development in diagnostic radiology from the past and improvement

in screening accuracy. However, Table A has been set, because using terms such as “cancer” or “malignant” easily in the field of health screening might pose excessive anxiety to subjects or unnecessarily confuse them.

Table A aims to avoid communication with subjects using terms such as “malignant” or “suspected to be malignant” casually. However, using only Table A results in very insufficient accuracy control, because it does not definitely indicate what assessment has been made in actual interpretation.

If Table A is used, radiologic diagnosis in a form equivalent to Table B or more detailed should be recorded and archived.

If Table B is used, careful consideration is essential; for example, preparing a result table form for subjects separately from the table for record, or taking measures to reduce the subject’s psychological burden in explanation or notification of results.

Double reading

Mode of interpretation will be double reading (double check). Note that double reading is non-simultaneous and that simultaneous interpretation by more than one physician is not double reading. Although simultaneous reading by more than one physician is useful in learning reading skill, it does not lead to prevention of “overlook” for which double reading is performed. Double reading is an action to improve reading accuracy that starts from the fact that “human error cannot be eliminated completely.” As this is an action to prevent an error or failure (e.g., overlook) from proceeding to accident or hazard (miss), it is an essential system in screening with the use of imaging.

Make radiologic diagnosis in all subjects

Since the basics of radiologic diagnostics have already been established and current institutional radiography has been improved to provide images with accuracy sufficient for diagnosis, it is legitimate to make diagnosis also for improvement in reading accuracy. If a case is assessed as “thorough examination needed” because it cannot be considered as being “normal” or “no thorough examination needed”, such an assessment cannot be an “interpretation.” An assessment is considered to be an “interpretation” only if diagnosis is made by integrating significant findings noted on the image.

Abolition of assessment category by finding

The previous guidelines[3] also defined assessment categories for each finding. However, as assessment is made not based on a single finding in interpretation, but made by integrating more than one finding in most cases and diagnosis made for all subjects, the assessment category field was deleted from Table 2 findings table.

Actual assessment

A case that is considered to be related to lifestyle is assessed as “C”, and lifestyle improvement instruction is actively introduced; unless it is assessed as “thorough examination needed” or “treatment needed.”

Considering that health screening is also for primary prevention contrarily to specialized cancer screening, it is not allowed to take no measure for cases that can have their health improved by changing lifestyle.

Comparative reading

Advanced digitalization has made it easier to compare images with previous ones. Comparative reading is essential if previous images are available. Comparative reading not only prevents overlook of slight changes but also allows omission of unnecessary thorough examinations. This helps to achieve not only improvement in examination accuracy but also a streamlined health screening system.

Accuracy control

As described in previous guidelines[3], accuracy control checklists have been prepared regarding examination and reading/assessment for population-based screening. In health screening, it is necessary to not only comply with this checklist but also pursue accuracy control more than that in gastric cancer mass screening.

To achieve this goal, improvement in accuracy of the whole screening system should be pursued with collaboration between physicians and technologists, as well as all staff involved in screening.

Collection and control of accuracy indices

Recognition of accurate cancer detection rate, rate of "thorough examination needed," and thorough examination rate is essential to screening institutions. To achieve this, it is also important to construct a close cooperative relationship with institutions providing thorough examinations, allowing feedback to each other. Although follow-up inspection is a difficult operation that requires a lot of human resources and time, accuracy cannot be improved without recognizing and investigating false-negative cases and false-positive cases.

Accuracy indices such as sensitivity and specificity can be obtained only through these activities, for which the whole screening staff, including physicians, should make efforts with subjective collaboration.

Taking into consideration that early cancer detection is not the only aim of health screenings, recognition of diseases other than cancers should also be considered sufficiently.

Ensuring implementation of prognosis research

Prognosis research is essential to investigate efficacy. Since the purpose of cancer screening is to reduce mortality rate due to certain target cancers, a cancer screening cannot be considered effective unless its decreasing effect on mortality rate is demonstrated, no matter how many early cancer cases the screening detects. As described above, radiology is the only screening method that is recognized to have a decreasing effect on mortality rate due to gastric cancer.

Health screening, on the other hand, has the primary purpose to eliminate health inhibiting factors and decrease mortality risk, not in the whole group but in each individual.

However, whether or not mortality risks of individuals have been reduced cannot be determined without prognosis research. If only cancer detection rate, rate of "thorough examination needed", and thorough

examination rate are collected and managed, neither reduction of mortality risks nor elimination of health inhibiting factors in individuals, the purposes of health screenings, can be ensured.

It should be strongly recognized that screening without follow-up research or prognosis research cannot be considered to be adequate, and that such screening should not be implemented.

Conclusion

Although priority of endoscopy is rapidly increasing in upper gastrointestinal examination of institutional screening, such as health screening, radiology is still the mainstream examination.

In general, cancer screening is considered such that “the intended goal cannot be reached unless the screening is performed in methods considered to be effective at high accuracy (including the examination but also system).” Radiology is still the only method that has been confirmed to be effective as gastric cancer screening, only if it is performed at accuracy above a certain level.

The present manual has been prepared to indicate the methods capable of guaranteeing the minimal efficacy in any institution.

We have prepared the present manual wishing that accurate radiology will be performed not only in some excellent institutions, but in all institutions. We hope all institutions providing health screening will utilize the present manual.

References

1) "Study on establishment of appropriate method of cancer screening and its evaluation method" by Ministry of Health, Labor and Welfare cancer research grant-Stomach cancer screening guidelines based on effectiveness evaluation 2006

2) New stomach X-ray (direct and indirect) guidelines, Japanese Society of Gastrointestinal Cancer Screening 2005

3) Daisuke Shibuya: Upper Gastrointestinal Radiography Screening. Supervision:Yoshio Goto, Masaharu Nara, Author: Minoru Yamakado, Masahide Abe, Health check criteria guidelines, Bunkodo, Tokyo, 2008, 164-168.

4) New stomach X-ray (direct and indirect) guidelines, Japanese Society of Gastrointestinal Cancer Screening 2011, Igaku shoin, Tokyo, 2011.

5) Japan Qality Assurance Organization of Gastroenterological Cancer Screening, Stomach cancer X-ray examination, technical department text, 2011

Results of upper gastrointestinal radiology screening

Table 1. Description of results

Table 1-1. Sites of findings

Esophagus
1. Upper esophagus
2. Middle esophagus
3. Lower esophagus

Stomach
4. Cardiac region (within about 2 cm from esophagogastric junction)
5. Gastric fornix (the region cranial to the level of the cardia, fundus)
6. Upper gastric corpus
7. Middle gastric corpus
8. Lower gastric corpus
9. Gastric angle region
10. Pyloric antral region
11. Prepyloric region (pyloric ring and the region within about 2 cm adoral to it)

Duodenum
12. Duodenal bulb
13. Postbulbar duodenum and the region anal to it

14. Extraluminal (excluding those with findings in the gastrointestinal tract on X-ray)

21. esophagus over wide region 22. stomach over wide region 23. Duodenum over wide region

Location in the gastric wall	a. Anterior wall b. Posterior wall c. Greater curvature d. Lesser curvature e. All circumference

Table 1-2. Definitions of assessment categories

A: Normal
B: Mild abnormality
C: Following-up/lifestyle instruction/re-examination needed
D: Medical care needed (D1: Treatment; D2: Thorough examination)
E: Under treatment

Note:

* Cervical esophagus is included in upper esophagus and abdominal esophagus in lower esophagus.
* If a finding covers more than one site/location in the gastric wall, describe all sites/locations involved. (e.g., a finding on an area spreading from the lower corpus through the posterior wall of the gastric angle to the lesser curvature, describe as 10. 11, b. d.)
* If a lesion broadly spreads over 3 areas or more, indicate the esophageal area as 21, gastric area as 22, and duodenal area as 23

Table 1-3. Description of interpretation/assessment

Technologist's check

It is desirable that the technologist checks the images before the physician's interpretation.

Although freehand sketch is desirable in the technologist's check, a technologist's check field may be included.

* An exemplary technologist's check field is shown below:

Technologist's check (example)

Site	Findings	Disease suspected	Remarks (comment to physician)

* Describe the disease suspected as a technologist as much as possible.
* If a check field is included as shown above, sketch the findings as much as possible.
* The technologist may describe in the check field only the findings he/she recognized.

Description of interpretation/assessment

The physician's interpretation shall basically be made in double reading (double check) by more than one physician.

The interpreting physician should record accurate and detailed reading results basically by browsing the technologist's check and previous data. In this viewpoint, the description table below is minimally detailed and very inadequate, particularly if presence of a lesion is definitely diagnosed or a malignant disease is suspected.

Record findings more thoroughly than the finding classification listed in Table 2 by describing handwritten sketch in a blank sheet, writing in schemas prepared by imaging position, or marking on the captured images.

Physician's interpretation table (example)

	Site	Comment on findings (detailed findings)	Diagnosis	Assessment category
Lesion 1				
Lesion 2				
Lesion 3				

[Exemplary description]

A convergence of mucosal fold is present from the lower gastric corpus to the lesser curvature-posterior wall of the gastric angle region. The fold is interrupted with granular mucosa defined by a clear border in the central part, and IIc is suspected

	Site	Findings	Assessment	Category
Lesion 1	10, 11, b.	2, 13, 15 Granular mucosa with a clear border in the center of FC	g.4 or suspected gastric cancer (IIc?)	D2

Note:

* Particularly in cases assessed as "D," the lesion(s) must be sketched or marked on the image with a recording of the size and detailed shape. (It is difficult to describe size and detailed findings in the remark field of the Physician's interpretation tables.)

* Although the layout of the Physician's interpretation table or sketch field may be defined originally by each institution, the above requirements should all be met.

Table 2. Findings

0. No abnormal findings
1. Niche
2. Convergence of mucosal fold
3. Shadow defect (the contour line is interrupted; may be expressed even without a filling picture)
4. Mass shadow
5. Translucency (including not only so-called “no contrast picture” but also cases where the medium that should be adhered to is repelled)
6. Indentation
7. Deformation (excluding indentation: short lesser curvature, poor stretching, narrowing, and dilation are also included)
8. Exclusion picture
9. Irregular contour line (including all findings of loss of continuity in smooth contour line curve, such as double line, rigid line, and irregular line)
10. Fine barium pooling or fleck
11. Convergence of mucosal fold-like finding
12. Bulky fold
13. Interrupted fold
14. Irregular fold (other than 11, 12, or 13)
15. Irregular mucosa (including poor medium adhesion, granular, nodular, and irregular area)
16. Esophageal hiatus hernia
17. Gastrointestinal foreign matter-like shadow (including food residue)
18. Post-gastrointestinal operation
19. Extragastrointestinal tumor-like shadow
20. Stone
21. Calcification picture
22. Others ( )

Note

* Because qualitative diagnosis is difficult based only on the above findings, describe detailed findings in the comment field or sketch field. (Particularly if malignancy is suspected or an assessment is made as thorough examination needed, detailed description of the abnormal finding used as the rationale is essential, such as location, shape, and size.)
* Expression or diagnostics of detailed findings (e.g., expression of fine convexo-concave in the mucosa and irregular contour) have not been finalized yet. The method to describe more detailed findings than the above is not daringly described as a unified opinion here. However, if the Japanese Society of Gastrointestinal Cancer Screening (JSGCS) or the non-profit Japan Quality Assurance Organization of Gastroenterological Cancer Screening (JQAOGCS) presents a return/report about that, we consider the method including the above classification findings.

Table 3. Interpretation and assessment category

Table A

Diagnosis	Assessment category
a. Normal	A
e1 Esophageal protruding lesion	D
e2 Suspected esophageal protruding lesion	D2
e3 Esophageal depressive lesion	D2
e4 Suspected esophageal depressive lesion	D2
e5 Esophageal polyp	C or D
e6 Esophageal diverticulum	D or B
e7 Esophageal varices	D2
e8 Esophagitis	D2 or C
e9 Achalasia	D2
e10 Other findings in the esophagus ( )	
g1 Gastric protruding lesion (excluding polyps)	D
g2 Suspected gastric protruding lesion (excluding polyps)	D2
g3 Gastric depressive lesion (excluding gastric ulcer)	D
g4 Suspected gastric depressive lesion (excluding gastric ulcer)	D2
g5 Submucosal tumor of the stomach	C or D
g6 Gastric ulcer	D1
g7 Suspected gastric ulcer	C
g8 Gastric ulcer scar	B or C
g9 Fundic gland polyp	B
g10 Gastric polyp (polyp other than fundic gland polyp)	C or D
g11 Gastric diverticulum	B
g12 Acute gastric (mucosal) lesion	C or D1
g13 Gastric erosion (excluding superficial gastritis)	B or C
g14 Chronic gastritis (atrophic, hyperplastic, and hypertrophic, etc.)	B or C
g15 Other gastric lesion ( )	
d1 Duodenal ulcer	Dl
d2 Duodenal ulcer scar	B or C
d3 Duodenal diverticulum	B or C
d4 Other duodenal findings ( )	
o1 Gallstone	D2 or C
o2 Visceral inversion	B
o3 Others ( )	

Table B

Diagnosis	Assessment category
a. Normal	A
e.1 Esophageal cancer	D
e.2 Suspected esophageal cancer	D2
e.3 Esophageal tumor (including polyps)	D2
e.4 Suspected esophageal tumor	D2
e.5 Esophageal ulcer	B or D2
e.6 Suspected esophageal ulcer	D2
e.7 Esophageal diverticulum	D or B
e.8 Esophageal varices	D2
e.9 Esophagitis	D or C
e.10 Achalasia	D2
e.11 Other findings in the esophagus ( )	
g.1 Gastric cancer	D
g.2 Suspected gastric cancer	D2
g.3 Submucosal tumor of the stomach	D2 or B
g.4 Gastric ulcer	D1
g.5 Suspected gastric ulcer	D2
g.6 Gastric ulcer scar	C
g.7 Fundic gland polyp	B
g.8 Gastric polyp (polyps other than fundic gland polyp)	C or D
g.9 Gastric diverticulum	B
g.10 Acute gastric (mucosal) lesion	B or C
g.11 Gastric erosion (excluding superficial gastritis)	C or D1
g.12 Chronic gastritis (atrophic, hyperplastic, and hypertrophic, etc.)	B or C
g.13 Other gastric lesions ( )	
d.1 Duodenal ulcer	D1
d.2 Duodenal ulcer scar	B or C
d.3 Duodenal diverticulum	B
d.4 Other duodenal findings ( )	
o.1 Gallstone	D2 or C
o.2 Visceral inversion	B
o.3 Others ( )	

Notes

* Use Table A or B depending on the judgment of a situation in each institution.

* Benign diseases should be assessed not as unified assessment category, but taking into consideration severity

of the abnormality, medical history, present illness, previous background, and life status.

* If which of D1 or D2 to select cannot be determined, select assessment category “D: Medical care needed.”
* Cases followed up without treatment or under postoperative follow-up by their attending physician will be applicable to Assessment “C.”
* Gastroesophageal reflux disease will be indicated as esophagitis only if erosion is noted in the lower esophagus on the radiogram and symptoms are present.
* So-called “takoibo erosion” is also included in “gastric erosion.”
* “Chronic gastritis” is defined to be a case with strong atrophy or a case where hyperplastic, metaplastic, or thickening change is noted.
* If a case is diagnosed to be chronic gastritis, assess the case taking severity of atrophy and age into consideration.
* In a case of gastritis where infection with *H. pylori* is suspected, care should be taken, because easily assessing as “B” means “no treatment is necessary.” Such a case rather needs to be assessed as “C” to consider *H. pylori* eradication or to schedule regular control screening.
* Previous data must be browsed to reflect current assessment, if available. Browse other laboratory data as necessary.
* If ABC risk classification for gastric cancer or *H. pylori* (HP) test has been performed, provide a message so as not to lead to misunderstanding.
* Describe precautions for HP-eradicated group also.
* For postoperative cases or cases with intragastric foreign matter or food residue, select Others and describe the detail in the parenthesis.

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