Clinical findings confirm national guidelines regarding primary gastroscopy for upper gastrointestinal symptoms

Hans Christian Rolff[1], Louise Rolighed Simonsen[2] & Jacob Rosenberg[3]

ABSTRACT

INTRODUCTION: This study describes unsedated transnasal oesophagogastroduodenoscopy (UT-OGD) in the office setting. Evaluation of national guidelines regarding primary endoscopy for the investigation of upper gastrointestinal (GI) symptoms was also a focus of this study.

MATERIAL AND METHODS: Retrospective registration of 2,000 cases regarding demographics, symptoms, pre-endoscopic treatment, feasibility and findings.

RESULTS: The proportion of males was 42%. 19% of the patients were referred due to alarm symptoms. The transnasal feasibility was 97%. Endoscopic findings: No abnormal findings (NAF) 53%, hiatal hernia 25%, oesophagitis 11%, gastric inflammation 11%, ulcer 10%, cancer 1% and others 1%. Alarm symptoms (AS) versus non-alarm symptoms (NAS): 35% of patients with AS had NAF versus 58% in the NAS group ($p < 0.001$). Cancer was present in 4% of the cases in the AS group versus 0.1% in the NAS group ($p < 0.001$). < 45 years versus ≥ 45 years: 69% of patients < 45 years had NAF versus 45% of patients ≥ 45 years ($p < 0.001$). Cancer was present in 0% of the cases in those < 45 years versus 1.4% in those ≥ 45 year ($p = 0.002$).

CONCLUSION: UT-OGD in private practice had a higher proportion of females than similar procedures performed in hospital settings. Feasibility was high. Endoscopic findings were comparable to those reported by other studies, except for a lower prevalence of oesophagitis. Age < 45 years and absence of alarm symptoms were strong negative predictors for the presence upper GI cancer. Our data thus seem to confirm the Danish guideline regarding primary endoscopy for the investigation of upper GI symptoms.

FUNDING: not relevant.

TRIAL REGISTRATION: not relevant.

A total of 60,000 oeosophago-gastro-duodenoscopies (OGDs) are performed yearly in Denmark [1]. When reviewing the international literature, it becomes apparent that no studies originating from the primary sector have yet been carried out. The present study therefore purports to make an overall evaluation of patient demographics, referral symptoms, pre-endoscopic treatment, feasibility and endoscopic findings for patients undergoing OGD in private practice and to compare the results with those originating from studies carried out in the hospital setting. OGD is the gold standard for examination of patients with symptoms originating from the upper part of the gastrointestinal (GI) tract [1]. One of the primary objectives of OGD is the detection of malignant disease in the upper GI tract. The question of when to choose primary endoscopy for the investigation of upper GI symptoms has been addressed by the Danish Society of General Medicine (DSAM) [1]. An important objective of this study was to evaluate the diagnostic guidelines made by DSAM while using data from the primary sector.

MATERIAL AND METHODS

Study set-up

The study was retrospective and based on information from patient records. Data collection was conducted as a review of all patients referred to OGD in the period from November 2007 to March 2010 in a single office-based private practice. At this facility only unsedated transnasal (UT) OGD was performed due to higher patient tolerance compared to conventional OGD [2-5]. We collected the variables given in **Figure 1**.

Looking at the symptoms leading to UT-OGD, a distinction between alarm symptoms and non-alarm symptoms was made. Alarm symptoms were considered as: Dysphagia with a duration over two weeks, vomiting without apparent explanation, gastrointestinal bleeding or anaemia, weight loss, palpable abdominal mass and newly onset and persistent dyspeptic or reflux symptoms in patients older than 45 years [6]. Patients were allocated to the alarm symptom group if they presented with one or more of the symptoms mentioned above. Patients referred with other symptoms or referred for other reasons than the above-mentioned were allocated to the non-alarm symptom group.

The endoscopic diagnoses oesophagitis and cancer were histologically confirmed. Patients with Barret's oeosophagitis were allocated to the oeosophagitis variable. All data were collected as dichotomous variables, except age which was a nominal variable. All OGDs were

ORIGINAL ARTICLE

1) The University of Copenhagen,
2) Clinic for Endoscopy and Surgery, Frederiksberg, and
3) Department of Surgery, Herlev Hospital

Dan Med Bul 2011;58(5):A4363

FIGURE 1

Flow chart for collection of data. All variables except age (continuous variable) were collected as binomial parameters.

Gender
Male
Female
Age
< 45 years
≥ 45 years
Referral symptoms
Alarm symptoms[a]
Non-alarm symptoms
Pre-endoscopic treatment
Type of pre-endoscopic treatment
Proton pump inhibitor
Antacids
Others
Feasibility
Transnasal
Transoral
No OGD performed
Endoscopic findings
No abnormal findings
Hiatal hernia
Oesophagitis[b]
Gastric inflammation
Ulcer
Cancer[b]
Other

OGD = oesophagogastroduodenoscopy.
a) Alarm symptoms: dysphagia with a duration over two weeks, vomiting without apparent explanation, gastrointestinal bleeding or anaemia, weight loss, palpable abdominal mass and newly onset or persistent dyspeptic or reflux symptoms in patients older than 45 years [12]. b) A diagnosis of oesophagitis and cancer required histological confirmation.

TABLE 1

Descriptive statistics of unsedated transnasal oesophagogastrodueodenoscopy in private practice. n = 2,000; mean age 52 years (standard deviation 16 years).

	n (95% confidence intervals)
Gender	
Male	42 (40-44)
Female	58 (56-60)
Proportion of patients < 45 years	35 (33-37)
Proportion of patients ≥ 45 years	65 (63-67)
Referral symptoms	
Alarm	19 (17-21)
Non-alarm	81 (79-83)
Pre-endoscopic treatment	
Proportion of patients receiving pre-endoscopic treatment	72 (70-74)
Type of pre-endoscopic treatment	
Proton pump inhibitors	91 (90-92)
Antacids	8 (7-10)
Other	6 (5-7)
Feasibility	
Transnasal	97 (96-97.5)
Transnasal	2 (1-2.5)
No oesophagogastroduodenoscopy	1 (0.7-1.5)
Endoscopic findings	
No abnormal findings	53 (51-56)
Hiatal hernia	25 (23-27)
Oesophagitis	11 (10-12)
Gastric inflammation	11 (10-12)
Ulcer	10 (8-11)
Cancer	1 (0.5-1.5)
Others	1 (0.5-1.5)

included in the review, meaning that there were no exclusion criteria.

Procedure

UT-OGD was performed in a private consultation facility by a senior endoscopist. A forward viewing video endoscope was used (Pentax EG-1580K) with an insertion tube diameter of 5.1 mm, working channel of 2.0 mm and working length of 1050 mm. The tip flexion capability was 210° up and 120° down. A 2% xylocain gel was applied in the nasal cavity prior to the procedure.

The endoscope was inserted through the more patent nostril. If transnasal insertion failed due to narrow nasoanatomical conditions, insertion through the other nostril was attempted.

If this attempt also failed, a pledget with 2 ml lidocaine-metaoxedrine solution (1 ml contained 50 mg lidocainehydrochloride and 1 mg phenylepinephrinechloride) was inserted in the nostril and nasal re-insertion of the scope was attempted after another two to three minutes. If transnasal reinsertion was unsuccessful, insertion through the conventional transoral route was attempted. When no OGD was possible or when it was not possible to observe the mucosa properly (retention, insufficient fasting or impassable stenosis), no findings were registered in the data sheet.

Statistics

In this study both continuous (age) and categorical (all variables except age) variables were registered. Confidence intervals of the continuous variable (age) were calculated using the mean and standard deviation. Confidence intervals of the dichotomous variables were calculated using the Agresti & Coull equation [7].

To evaluate the national diagnostic guidelines [1], comparative analyses (alarm symptom study population (ASP) versus non-alarm symptom study population (NASP) and < 45P versus ≥ 45P) were carried out using the non-parametric Chi square test for the dichotomous variables and the Mann-Whitney U test for the continuous variable (age). The level of significance was set at $p = 0.05$.

TABLE 2

Comparative analyses between subpopulations. The chi-square test was utilized for the statistical analyses except from the comparison of age where the Mann-Whitney U test was applied.

	Alarm symptoms, % (n = 382)[a]	Non-alarm symptoms, % (n = 1,618)[b]	p	Patients < 45 years, % (n = 698)	Patients ≥ 45 years, % (n = 1,302)	p
Gender						
Male	53	39	< 0.001	43	41	0.4
Female	47	61	< 0.001	57	59	0.4
Proportion of patients < 45 years	2	38	< 0.001	–	–	–
Proportion of patients ≥ 45 years	77	62	< 0.001	–	–	–
Referral symptoms						
Alarm	–	–	–	12	23	< 0.001
Non-alarm	–	–	–	88	77	< 0.001
PET						
Proportion receiving PET	54	76	< 0.001	75	71	0.025
Type of PET						
Proton pump inhibitor	93	91	0.1	91	91	0.9
Antacids	6	9	0.2	7	9	0.3
Others	6	6	0.99	6	6	0.8
Feasibility						
Transnasal	95	97	0.07	97	97	0.6
Transoral	3	2	0.1	2	2	0.08
No OGD	2	1	0.5	1	1	0.2
Findings						
No abnormal findings	35	58	< 0.001	69	45	< 0.001
Hiatal hernia	33	23	< 0.001	16	30	< 0.001
Oesophagitis	27	7	< 0.001	5	14	< 0.001
Gastric inflammation	14	10	0.08	9	12	0.05
Ulcer	10	9	0.6	6	12	< 0.001
Cancer	4	0.1	< 0.001	0	1.5	0.002
Other findings	1	1	0.5	1	1	0.2

OGD = oesophagogastroduodenoscopy; PET = pre-endoscopic treatment.
a) Mean age 58 years (standard deviation 15 years)*** b) Mean age 50 years (standard deviation 16 years)***
***) p < 0.001.

Trial registration: not relevant.

RESULTS

The overall results are listed in **Table 1**. The results of the comparative analyses are shown in **Table 2**. The study population comprised 2,000 consecutive patients. Their mean age was 52 years, 65% of the study population was 45 years or older. 58% were women. 19% had alarm symptoms leading to OGD. 73% received pre-endoscopic treatment (PET) (91% of these received proton pump inhibitors (PPI)) when presenting for endoscopy. 97% of the OGDs were performed trans-nasally, 2% trans-orally and 1% was unsuccessful. There were no complications in the 2,000 cases.

Alarm symptom study population versus non-alarm symptom study population: The mean age in the alarm symptom study population (ASP) was 58 years versus 50 years in the non-alarm symptom study population (NASP) (p < 0.001). 23% of the cases in the ASP were < 45 years, while 38% of the cases in the NASP were < 45 years (p < 0.001). 53% of the patients with alarm symptoms were male, whereas only 39% of patients with non-alarm symptoms were male (p < 0.001). 76% of the patients referred to OGD due to non-alarm symptoms were receiving PET compared with 54% of patients referred to UT-OGD because of alarm symptoms (p < 0.001). 35% of the patients in the ASP had no abnormal findings (NAF) versus 58% in the NASP (p < 0.001). 33% of the patients in the ASP had a hiatal hernia versus 23% in the NASP (p < 0.001). The prevalence of oesophagitis was 27% in the ASP and 7% in the NASP (p < 0.001). The prevalence of patients with cancer was 4% in the ASP (4%) versus 0.1% in the NASP (p < 0.001).

< 45-year study population versus ≥ 45-year study population:

Alarm symptoms leading to referral to UT-OGD was present in 12% in the study population < 45 years (< 45P) and 23% in the study population ≥45 years (≥ 45P) (p < 0.001). 69% in the < 45P had NAF upon UT-OGD, while 45% in the ≥ 45P had NAF. (p < 0.001). Hiatal hernia was more prevalent in the ≥ 45P than in the < 45P with prevalences of 30% and 16%, respectively (p < 0.001). Oesophagitis was present in 14% of cases in the ≥ 45P and in 5% of the cases in the < 45P (p < 0.001).

The endoscopy room. Courtesy of Clinic for Endoscopy and Surgery.

Ulcer was present in 12% of the cases in the ≥ 45P compared with 6% in the < 45P ($p < 0.001$). Cancer was present in 1.5% of the cases in the ≥ 45P compared with 0% in the < 45P ($p = 0.002$).

DISCUSSION

The demographic data showed that the mean age for patients undergoing OGD in our study was congruent with the age reported in other studies in hospital settings which reported mean ages of 47 years [8], 51 years [9], 57 years [10] and 49 years [11].

The overall proportion of males was lower than in studies from the hospital setting reported by others, viz. 47% (conventional oesophagogastroduodenoscopy (C-OGD)) [8], 50% (C-OGD) [9], 57% (UT-OGD) [10] and 49% [12]. The reason for this difference between our results and those of others was difficult to determine. Women more frequently visit their general practitioner (GP) than men [13]. This overrepresentation of women in the GP's office may affect the gender composition in the next chain of the primary sector, in this case private practice. This could explain the differences in gender composition between this study and studies from the tertiary sector. However, we have insufficient data to validate this theory.

Only few published articles have studied referral symptoms. The present study only distinguished between alarm symptoms and non-alarm symptoms. Meineche-Scmidt showed a prevalence of alarm symptoms of 12% [14]. In Everhart et al [12], the prevalence of alarm symptoms was 27.7%. Yet, comparison between these three studies is strongly hampered by the differences in the criteria they used for defining alarm symptoms. Nonetheless, the increase over time in patients presenting with alarm symptoms could represent a real change in the patient population undergoing OGD due to changed diagnostic guidelines [15]. The fact that fewer patients had alarm symptoms in our study than in Everhart et al [12] may reflect a tendency for patients with alarm symptoms to be referred to hospital for subacute OGD rather than to private practice, although we cannot make such a conclusion on the basis of our data alone.

A higher proportion of patients received PET in our study than in studies in hospital settings where 22% [8] or 30% [9] were receiving treatment with ''ulcer drugs'' prior to gastroscopy. The increase in the proportion of patients receiving PET was congruent with the trend in the prescription pattern in the primary sector, where a 30% increase in the prescription of PPI drugs from 2005-2009 was observed [16].

The overall transnasal feasibility of OGD was high and comparable to that reported in other published series [5, 10, 11, 17]. No serious complications (i.e. perforation or oesophageal tear) were encountered in our series.

In a study of C-OGD from the hospital setting by Hansen et al [8], the endoscopic findings were as follows: No detectable disease 60%, oesophagitis 23%, duodenal ulcer 10%, gastric ulcer 6% and cancer 1%. In another open-access C-OGD study from the hospital setting [9], the findings were as follows: No detectable disease 64%, oesophagitis 20%, duodenal ulcer 7%, gastric ulcer 8% and cancer 1%. The findings in these studies differ from those presented our study regarding the prevalence of oesophagitis and ulcers. When comparing patient characteristics between our study population and the populations of [8] and [9], it was apparent that our study population was slightly older, had a higher proportion of males and, more importantly, patients were receiving more PET. This may, in part, have explained some of the differences regarding the prevalence of acid-related findings. Another factor that may also have played a role was the different OGD methods employed. Using the transnasal scope reduces the working channel diameter which may, in part, also explain some of the discrepancies.

In a large database study from the United States that included all OGDs performed in all sectors and examining both acute and elective OGDs in the 2001-2005 period, Everhart et al [12] reported findings in selected categories as follows: Normal examination 42%, hiatal hernia 33%, oesophageal inflammation 18%, ulcer 6% and tumour 1%. These results were collected nationwide, both in hospital, office and ambulatory surgery centres and they included both elective and acute OGDs. There was no information on PET, no information on the mean age of patients who underwent EGD, and no registration on the proportion of UT-OGD that was performed. These factors made it difficult to make a direct comparison between the two studies. Nevertheless, a substantial difference existed between the prevalence

of "oesophageal inflammation" in Everhart et al [12] and the prevalence of oesophagitis in our study. This difference was partly explained by the different criteria required to label a specific finding as oesophageal inflammation/oesophagitis. In our study, histological confirmation was required to confirm the diagnosis of oesophagitis, which was not the case in the American study [12].

We found upper GI pathology more often in the ASP than in the NASP, which suggests that alarm symptoms in private practice was a risk factor for upper gastrointestinal disease. The proportion of males was significantly higher in the ASP than in the NASP, and the ASP was significantly older than the NASP. These two factors probably also had an effect on the endoscopic findings. Almost no cancers were found in the NASP, which in a way validates the term "alarm symptoms". The fact that the finding of cancer in the NASP was almost absent means that absence of alarm symptoms was a very strong negative predictor for the presence of upper GI cancer.

The patients in the ≥ 45P had significantly more pathological findings than patients in the < 45P. The difference may partly be explained by the significantly larger proportion of patients with alarm symptoms in the ≥ 45P. Lifestyle factors may also explain some of the differences, but this parameter was not investigated. No cancers were found in the < 45P, meaning that age < 45 years was a very strong negative predictor for the presence of upper GI cancer.

Age ≥ 45 years and presence of alarm symptoms both seemed to be risk factors for upper GI disease. Whether or not these were independent risk factors was not assessed in this study.

CONCLUSIONS

This study showed that UT-OGD in private practice had a high feasibility rate.

The proportion of females undergoing OGD in private practice was significantly higher than that in the hospital setting. Other patient characteristics regarding age and transnasal feasibility were comparable between the primary and the tertiary sector. Endoscopic findings were also comparable except for the presence of oesophagitis, which was significantly lower in the primary sector.

This study established that absence of alarm symptoms and age < 45 years were strong negative predictors for the presence of upper GI cancer.

This study, which draws its data exclusively from the primary sector, hereby gives a positive evaluation of the national diagnostic guidelines regarding when to choose primary endoscopy for patients with upper GI symptoms.

CORRESPONDENCE: *Hans Christian Rolff*, Madvigs Allé 4, 3. tv., 1829 Frederiksberg C, Denmark. E-mail: hc.rolff@gmail.com

ACCEPTED: 11 February 2011

CONFLICTS OF INTEREST: Disclosure forms provided by the authors are available with the full text of this article at danmedbul.dk

LITERATURE

1. Dyspepsi: udredning og behandling af voksne med symptomer fra øvre mave-tarm-kanal: klinisk vejledning for almen praksis. Copenhagen: Dansk Selskab for Almen Medicin, 2009.
2. Maffei M, Dumonceau JM. Transnasal esogastroduodenoscopy (EGD): comparison with conventional EGD and new applications. Swiss Med Wkly 2008;138:658-64.
3. Trevisani L, Cifala V, Sartori S et al. Unsedated ultrathin upper endoscopy is better than conventional endoscopy in routine outpatient gastroenterology practice: a randomized trial. World J Gastroenterol 2007;13:906-11.
4. Stroppa I, Grasso E, Paoluzi OA et al. Unsedated transnasal versus transoral sedated upper gastrointestinal endoscopy: a one-series prospective study on safety and patient acceptability. Dig Liver Dis 2008;40:767-75.
5. Christensen M, Achiam M, Trap R et al. Transnasal gastroscopy. Dan Med Bull 2000;47:218-20.
6. Pakkeforløb for kræft i spiserøret, mavemunden og mavesækken. Copenhagen: Danish National Board of Health, 2009.
7. Agresti A, Coull BA. Approximate is better than ''exact'' for interval estimation of binomial proportions. Am Stat 1998;52:119-26.
8. Hansen JM, Bytzer P, Schaffalitzky de Muckadell OB. Management of dyspeptic patients in primary care. Value of the unaided clinical diagnosis and of dyspepsia subgrouping. Scand J Gastroenterol 1998;33:799-805.
9. Bytzer P, Hansen JM, Havelund T et al. Predicting endoscopic diagnosis in the dyspeptic patient: the value of clinical judgment. Eur J Gastroenterol Hepatol 1996;8:359-63.
10. Cho S, Arya N, Swan K et al. Unsedated transnasal endoscopy: a Canadian experience in daily practice. Can J Gastroenterol 2008;22:243-6.
11. Dumortier J, Josso C, Roman S et al. Prospective evaluation of a new ultrathin one-plane bending videoendoscope for transnasal EGD: a comparative study on performance and tolerance. Gastrointest Endosc 2007;66:13-9.
12. Everhart JE, Ruhl CE. Burden of digestive diseases in the United States part I: overall and upper gastrointestinal diseases. Gastroenterology 2009;136:376-86.
13. Østergaard I. Almen medicin. 2nd ed. Copenhagen: Munksgaard Danmark, 2007.
14. Meineche-Schmidt V, Krag E. Dyspepsia in general practice in Denmark. A 1-year analysis of consulters in general practice. Scand J Prim Health Care 1998;16:216-21.
15. Talley NJ, Silverstein MD, Agreus L et al. AGA technical review: evaluation of dyspepsia. Gastroenterology 1998;114:582-95.
16. Sales of medicinal products within the different ATC groups in the primary healthcare sector. Medicinal Product Statistics (2005-2009) Denmark. 1st ed. Copenhagen: Danish Medicines Agency, 2010:24.
17. Dumortier J, Napoleon B, Hedelius F et al. Unsedated transnasal EGD in daily practice: results with 1100 consecutive patients. Gastrointest Endosc 2003;57:198-204.