MODIFIED MALLAMPATI CLASSIFICATION SCORE- A SIMPLE TOOL FOR PREDICTING TOLERANCE IN UNSEDATED OESOPHAGOGASTRODUODENOSCOPY

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ABSTRACT

BACKGROUND

40-47% of patients poorly tolerates esophagogastroduodenoscopy (EGD). Early identification of potentially intolerant patients improve procedural success and avoid patient discomfort. Modified Mallampati Classification (MMC) score is a simple scoring system used to predict difficult tracheal intubation and laryngoscope insertion. As EGD involves the same level of patient discomfort during introduction, MMC may predict EGD tolerance.

MATERIALS AND METHODS

100 patients with dyspeptic symptoms and no alarm features attending our department were recruited for unsedated EGD between January and July 2012. All patients had good performance status and underlying anxiety disorder was excluded. Based on MMC, patients placed into 4 classes- I: Soft palate, fauces, pillars and uvula visible. II: Soft palate, fauces and uvula visible. III: Soft palate and base of uvula visible. IV: Soft palate not visible. They were divided into good view (class I and II) and poor view (class III and IV). EGD was performed by the same consultant and MMS status assessed by two independent trained personnel. All received 2 doses of topical pharyngeal spray containing 10% lidocaine hydrochloride. Outcome measurements were gag reflex, endoscopist's assessment and patient feedback.

RESULTS

Of 100 patients, 52 were males. 58 in group A and 42 in group B. Gag reflex was present in 32.7% of good view group compared to 78.6% in poor view ($p<0.001$). From the endoscopist's view, good tolerability observed in 72.4% of good view group compared to 21% in poor view ($p<0.001$). 74.1% patient reported satisfactory feedback in good view group compared to 19% in poor view group ($p<0.001$).

CONCLUSION

MMC is a good clinical indicator for predicting tolerance in unsedated EGD.

KEYWORDS

Oesophagogastroduodenoscopy Tolerance, Mallampati Classification.

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BACKGROUND

Oesophagogastroduodenoscopy (EGD) is indicated in screening diagnostic evaluation of wide variety of gastrointestinal disorders and therapeutic procedure for the upper gastrointestinal tract. 21-40% of patients poorly tolerate unsedated EGD.[1,2] Use of sedation during EGD may eliminate procedural discomfort and increase patient compliance with EGD.[3,4] However, it involves more procedure time, requires close monitoring, ancillary personnel and has slightly increased morbidity and mortality.[5] Early identification of subjects who may not tolerate EGD well might lead to optimal utilisation of resources, decrease procedure related complications and improve patient satisfaction.

At present, there are no clear guidelines regarding, which patients should undergo sedated EGD. Data from Iraq.[6] Scandinavia[7] suggests majority of patients comfortably undergo unsedated EGD, whereas few studies from US suggests most gastroenterologists prefer sedated EGD.[8] Samsoon et al[9] proposed modification of Mallampati classification, a simple scoring system used to predict difficult tracheal intubation and laryngoscope insertion for the ease of application in clinical practice, which was originally proposed by Mallampati and colleagues.[10] A meta-analysis of 42 studies concluded that the modified Mallampati score is a good predictor of difficult direct laryngoscopy and intubation.[11] MMC adds a visual analogue scale to assess the upper airway and as EGD involves the same route during introduction and produce similar discomforts, MMC may risk stratify patients for upper gastrointestinal endoscopic procedures. In the present

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study, we aim to assess EGD tolerance in relation to a visual analogue scale for assessing oropharynx using MMC.

Objective

To assess the efficacy of Modified Mallampati Classification (MMC) score in predicting tolerability of unsedated EGD.

MATERIALS AND METHODS

This study was done on 100 consecutive adult patients attending Department of Gastroenterology, Medical College, Calicut, with dyspeptic symptoms from January 2012 to July 2012. All had good performance status. Those with prior history of oropharyngeal surgery, subjects on sedatives and those with Hamilton anxiety score 2 or more, prior EGD evaluation were excluded from the study. A written informed consent was obtained before the procedure. The study protocol was accepted by the Institutional Research and Ethics Committee.

Detailed medical history and physical examination was done before the procedure. Basic demographic data, weight and height of the subject, prior EGD examination status were recorded. MMC scoring was done by two independent trained personnel in the endoscopy unit. All EGDs were performed by a single consultant endoscopist using Pentax EPK-700. Both patients and endoscopist were blinded regarding MMC status. All patients received two puffs of topical pharyngeal spray containing 10% lidocaine 5 minutes before the procedure. During the procedure, patients were closely monitored for change in heart rate, respiratory distress and peripheral oxygen saturation.

Assessment

Modified Mallampati classification (MMC)

Patients were assigned four classes (see Figure 1).[9]

Class I- Soft palate, fauces, pillars and uvula are visible.

Class II- Soft palate, fauces and uvula are visible.

Class III- Soft palate and base of uvula are visible.

Class IV- Soft palate is not visible at all.

MMC assessment done with patient sitting upright, mouth maximally opened, tongue protruded and without phonation.

Class I and II were defined as "good view" and III and IV as "poor view" group.[12]

Tolerance Assessment

Includes, endoscopist assessment and patient feedback.

Endoscopist Assessment

Objectively assessed difficult intubation by obvious retching, gag reflex and scores were given in a scale of four- (extremely well tolerated (1); well tolerated (2); poor toleration (3); extremely poor toleration(4)).

Scale of 1 or 2 considered as good tolerability and scale 3 or 4 considered as poor tolerability in the present study.

Patient Feedback

Assessed whether willing to undergo a second EGD at a later date and were graded into a scale of four based on patient's satisfaction- ((Extremely satisfied (1); Satisfied (2); Not satisfied (3); Poorly satisfied (4)).

Scale of 1 or 2 considered as satisfactory and scale 3 or 4 considered as not satisfactory in the present study.

RESULTS

The ages of 100 patients enrolled in the study ranged from 17 to 64 years with mean being 40.4 years. 52 were males and 48 were females. BMI ranged from 15.3 to 25.1 kg/m2 with mean BMI of 22.35 kg/m2. All patients had Hamilton anxiety score <2. Gastroesophageal Reflux Disease (GERD) was diagnosed in 21%, peptic ulcer disease in 8% and EGD was normal in 69% (Table 1). Following unsedated EGD, 52% patients felt satisfied and 53% were willing to undergo a second EGD at a later date. From the endoscopist's view, 51% patients had good tolerability.

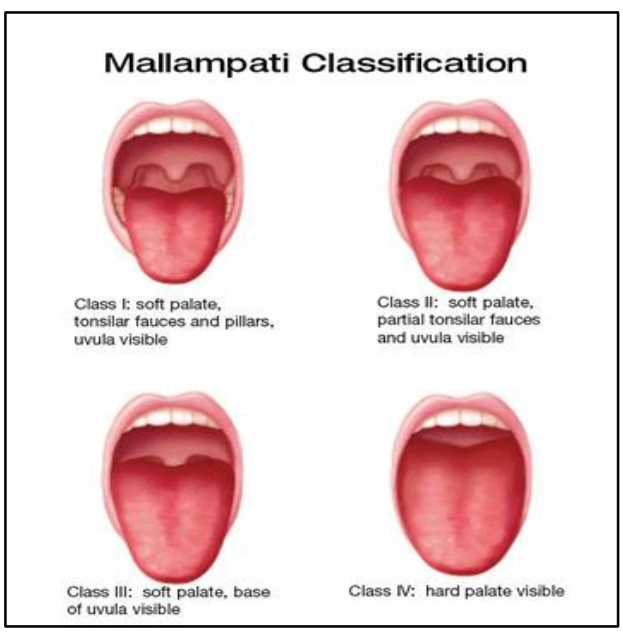

Figure 1. Mallampati Classification

58% of patients were in the good view group (class I and II) and 42% patients in poor view group (class III and IV). 52% of patients had gag reflex during EGD. Proportion of patients in the poor view group had significant higher gag reflex than the good view group (73.6% vs. 32.7, p<0.001). Patients with good tolerability based on endoscopist assessment were higher in good view group (72.4% vs. 21%, p<0.001). More patients in the good view group had satisfactory patient feedback (74.1% vs. 19%, p<0.001) and were willing to undergo a second EGD if needed (72.4% vs. 26.2%, p<0.001) (Table 3).

It was also observed that patient's perception of EGD correlated well with endoscopist's assessment. Parameters like age, gender, BMI and EGD diagnosis were comparable between the good view group and poor view group and there is no significant difference (Table 2).

Age (years)	40.44 ± 11.51
BMI (kg/m2)	22.35 ± 3.12
Gender (M:F)	52:48
EGD diagnosis	
Normal	69
GERD	21
PUD	8
Both	2
Good view (class 1 and 2)	58
Poor view (class 3 and 4)	42

Table 1. Baseline Characteristics

	Gag Reflex		P Value
	Absent	**Present**	
MMC poor view	9	33	<0.001
Male gender	24	28	0.782
BMI (kg/m2)	22.6 ± 3.7	22.3 ± 4.1	0.71
EGD diagnosis			
Normal	36	33	
GERD	9	12	
PUD	4	4	
Both	0	2	

Table 2. Comparison of Clinical and Demographic Characteristics

	Good View	Poor View	P Value
Gag reflex	32.7% (19/58)	72.6% (33/42)	<0.001
Endoscopist assessment-good tolerability	72.4% (42/58)	21% (9/42)	<0.001
Patient feedback - satisfactory	74.1% (43/58)	19 (9/42)	<0.001
Willing for further endoscopy	72.4% (42/58)	26.2% (11/42)	<0.001

Table 3. MMC and EGD Tolerance

DISCUSSION

The factors determining EGD tolerance can be assessed from the patient and endoscopist's perspective. Of which most important factor is the patient satisfaction. Other parameters, which indicate EGD tolerance include- 1) Ease of EGD intubation; 2) Gag reflex and severity of retching during introduction; 3) Endoscopist's assessment of patient tolerance during EGD. Walmsley et al[13] has shown that a good correlation exists between endoscopist's assessment and patient tolerance. Farhadi et al[2] showed patients more than 60 years of age were more likely to tolerate unsedated EGD than those younger than 25 years. But, recent prospective study from Japan did not find any such association.[14] Regarding association between EGD tolerance and parameters like gender of the patient, smoking status, educational status and BMI, the results appears conflicting.[2,15,16,17]

Since its introduction in 1985, MMC has routinely used in clinical practice to predict difficult direct laryngoscopy and intubation. Since EGD involves the same route as tracheal intubation and same discomfort, it was assumed that MMC, a simple bedside test might predict EGD tolerance and could stratify patients for EGD. Huang et al[12]first demonstrated utility of MMC in predicting EGD tolerance. Huang et al included patients with underlying anxiety state, those with prior EGD evaluation and patients were recruited irrespective of performance status. Present study has included subjects presenting with dyspepsia and no alarm symptoms. Those with good performance status alone were included and those with underlying anxiety state as identified by Hamilton anxiety score were not recruited.

There is no clear consensus regarding parameters for assessing EGD tolerance. In the present study, the indicators represented EGD tolerance from the endoscopist's perspective and patient's perspective. Waiting time before the procedure, procedural duration did not vary significantly and none of the patients underwent biopsy or any other therapeutic procedures during EGD study. Patient tolerance were assessed by two parameters. First, willingness to undergo a second EGD at a later date if needed. In the present study, 53% of the subjects were willing to undergo a second EGD and 52% were satisfied with the current EGD study. Huang et al suggested a poor correlation between willingness to repeat unsedated EGD and patient satisfaction. Our study show a strong association between these two parameters (53% and 52%). Patient satisfaction was graded in a scale of four and during analysis they were regrouped into two- satisfactory or not satisfactory to reduce the subjective potential.

Endoscopist's assessment included two parameters. First, presence of gag reflex during introduction. Gagging during throat lidocaine spraying shown to correlate with poor EGD tolerance.[2] Significant gag reflex during introduction of EGD may result in significant patient distress, violet peristalsis and might interfere with interpretation of EGD findings thereby affecting the quality of EGD. In the current study, 52% had significant gag reflex and a higher proportion of patients in poor view group had significant gag reflex (72.6% vs. 32.7%). The second indicator of endoscopist's assessment was graded in a scale of four and during analysis they were placed into two groups - good tolerance and poor tolerance.

A disproportionately large base of tongue may obscure vision during EGD and may result in loss of direction during the procedure. This may inadvertently cause procedural discomfort and can result in choking, tachycardia and excessive retching. MMC is a simple bedside test, which could be assessed by any trained personnel, can easily assess oropharyngeal space and patients can be further stratified for sedated or unsedated EGD.

Our study did not find any significant association between age, gender, BMI or EGD diagnosis with regard to EGD tolerance in contradiction to earlier studies.[12,18] In the present study, mean age group of patients were 40.4 years and did not include extreme age groups (minimum 17 years, maximum 67 years). BMI ranged from 15.3 to 25.1 kg/m2 with mean BMI of 22.35 kg/m2. In majority of patients, EGD diagnosis was normal. As this study was not aimed to determine factors predicting EGD tolerance, the study group included were predominantly middle-aged persons with

good performance status. This may explain poor correlation between the demographic variables and EGD tolerance. Patients with poor view of oropharynx may not tolerate unsedated EGD well and these might be better candidates for sedated EGD or transnasal EGD with ultrathin endoscopes.

Our study has several limitations. Patients with good performance status and no comorbidities were included in the study. Whether the findings of this study can be applied to patients with comorbidities needs to be examined. Patient feedback response were assessed on a subjective scale and this may vary on individual basis. Lastly, the current study included only diagnostic EGD.

CONCLUSION

Visual analogue scale for assessing oropharynx using MMC is a good clinical indicator for predicting tolerance in unsedated EGD. This simple bedside test might predict the need for sedative EGD in patients with poor view of oropharynx.

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