ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

Mansoura Numeroalphabetic Constipation Score in Obstructed Defecation Syndrome (ODS): Validation of a New Score

Sameh Emile, Mohamed Youssef, Waleed Thabet, Waleed Omar, Tito M Abd El-Hamed, Ayman Elshobaky, Ayman El Nakeeb, Alaa Magdy, El-Yamani Fouda, Mohamed Farid

Manuscript Info

Manuscript History:

Received: 12 August 2015
Final Accepted: 22 September 2015
Published Online: October 2015

Key words:

Mansoura score, constipation, obstructed defecation, Wexner, KESS.

Corresponding Author

Sameh Emile

Abstract

Background and Aim: Many scores were designed to evaluate the severity of constipation especially in obstructed defecation syndrome. This study aims to validate a new scoring system for constipation by comparing it with the existing commonly used scores.

Patients and Methods: The data of 96 patients (49 males) complaining of ODS who were admitted to colorectal surgery unit from June 2013 to June 2015 were analyzed. 40 asymptomatic subjects were assigned in the control group. All patients had been assessed by history taking, submitting to three different constipation scoring systems (Wexner, Knowles-Eccersley-Scott-Symptom (KESS) and Mansoura scoring systems).

Results: Patients with obstructed defecation were allocated into three subgroups (18 patients with anismus, 37 patients with rectocele, and 41 patients with rectal intussusception) with 40 asymptomatic controls. Mean total Mansoura score in constipated patients was 9.94 (range, 4-12) compared with a mean of 0.95 in control group (range, 0-2). The resulted scoring of Mansoura Score was compared with that of Wexner and KESS scores in both patients and control groups and Mansoura score proved to have a statistically significant relation with the other two scores ($p < 0.05$). The mean score of the three scoring systems were highly correlated, (Pearson $r = 0.90$). Correlation coefficients were (0.9977, 0.9983) respectively with p value < 0.00001.

Conclusion: The Mansoura Numeroalphabetic Constipation Score (MNCS) is a simple, modified version of Wexner and KESS scores. It has the advantage of accurate, rapid and easy assessment of obstructed defecation, differentiating the constipated patient from the normal subject effectively.

Copy Right, IJAR, 2015,. All rights reserved

INTRODUCTION

Constipation is one of the commonest gastrointestinal disorders. Over $800 million are spent for over-the-counter laxatives in the United States alone, so it is clear that constipation represents a major public health problem (Lembo & Camilleri, 2003).

The definition of constipation varies tremendously among both patients and physicians, thus when a patient complains of constipation it is important to find out exactly what is meant by the term (Hinton & Lennard-Jones, 1968). Rome criteria are used for definition of functional constipation, either Rome I criteria (Drossman et al., 1990) or Rome II criteria (Thompson et al., 1999).

Constipation occurs in 2-27% of North American population, most estimates ranging from 12% to 19%. Prevalence increases exponentially in persons aged > 65 years, with women affected more frequently than men approximately 2:1 to 3:1 (Higgins & Johanson, 2004).

It is important to distinguish between constipation caused by primary functional causes and constipation secondary to mechanical disorders or medications (Harari et al., 1996). A number of factors can contribute to secondary constipation such as mechanical obstructions, medical co-morbidities, medications and lifestyle issues (Prather & Oritz-Camach, 1998).

Evaluation of constipation as regard its causes and ultimate treatment needs precise definition and assessment that is why scoring systems were developed in attempt to reach proper management for constipation. Different scoring systems of constipation have been devised, yet there is no comparative study between them as regard their rule in prediction of whom are in need for surgical interference and outcome of different surgical modalities in management of obstructed defecation. This study aims to evaluate the Mansoura numerolphabetic score of constipation and its applicability in comparison to the other constipation scoring systems.

Patients and Methods

Ninety six patients with ODS diagnosed by clinical examination and physiologic investigations were enrolled in this prospective study in the period of June 2013 to June 2015. The mean age of patients was 42.6 years ± 16.43 (ranging from 17 to 70 years). Patients were 49 (51%) males and 47 (49%) females, with male to female ratio 1.04: 1. The control group comprised 40 subjects (24 males; 60%), with mean age of 38.26 ± 8.34.

Inclusion criteria for patients in the study:

Patients complaining of obstructed defecation of any age with:

1- Paradoxical contraction of puborectalis muscle (Anismus).
2- Anterior rectocele.
3- Internal rectal intussusception with no associated fecal incontinence.

Exclusion criteria:

Patients with:

1- Obstructed defecation associated with other anorectal pathologies (fissure, hemorrhoids).
2- Patients with history of previous anorectal surgery.
3- Rectal prolapse associated with fecal incontinence.
4- Constipation due to Dietary habits, irritable bowel syndrome, neoplasm or colonic inertia.

Methods:

All patients and controls were interviewed by a resident about their personal history, current complaint and present history in details, including bowel habits and gastrointestinal complaints. All patients and controls then completed three constipation scores [Mansoura numerolphabetic score, Wexner score (Agachan et al., 1996) and Knowles-Eccersley-Scott-Symptom (KESS) score (Knowles et al., 2000)]. Thorough general examination was followed to exclude neurologic disorder, myopathies, endocrine or metabolic disorders, as well as organic causes such as diverticular disease of the colon, inflammatory bowel diseases, and colonic neoplasms. All patients were examined locally in the left lateral position, anorectal examination included: inspection, digital rectal examination, and proctoscopy.

Also, all patients underwent physiologic studies as anorectal manometry to measure both the mean resting and squeeze anal pressures, colon transit studies to exclude colonic inertia and defecography which classified patients of ODS into 3 main categories: rectocele, anismus and internal rectal intussusception. A comprehensive evaluation such as colonoscopy or barium enema was performed when indicated to exclude organic lesions such as neoplasm, diverticular disease of the colon and inflammatory bowel diseases.

Data analysis:

Statistical analysis of the collected data was performed using excel program and SPSS (Statistical Package for Social Science) version 16 (Bristol, UK) under Microsoft Windows.

The description of data was done in form of mean ± SD for quantitative data; while frequency and proportion for qualitative data. The analysis of data was done to test the statistical significant difference between groups. For quantitative data (mean ± SD): To compare between 2 groups Student t-test was used. Quantified values were compared by using Pearson's correlation coefficient analysis. Fisher's exact test was used to verify the association of qualitative values. P value < 0.05 was considered significant.

Mansoura Numerolphabetic Constipation Score (MNCS), Farid Score

It is a structured score consisting of 9 items that was designed to be applied in no more than 5 minutes. Each question is to be answered by yes or no. Four items were considered as major criteria with 2 points for each and five items were considered minor criteria with 1 point for each.

The maximum possible Mansoura score is 13 points, which is classified into 5 stages from 0 to D according to the total score. Constipation was defined when the total score is > 2. The higher the score, the more severe is the constipation.

Item	Score
Minor criteria	
1) Dull rectal pain	1 point
2) Need for enemas at least once a week	1 point
3) Need for anal digitation at least once a week	1 point
4) Major straining in less than 25% of bowel action	1 point
5) Sensation of incomplete evacuation	1 point
Major Criteria	
1) Major straining in more than 25% of bowel action and or the time of defecation	2 points
2) Less than 3 bowel action per week	2 points
3) Sensation of anal obstruction upon defecation in over 25% of bowel action	2 points
4) Habitual defecation difficulties even with soft or liquid stool.	2 points

Staging:
Stage O (0-1),
Stage A (2-4),
Stage B (5-7),
Stage C (8-10),
Stage D (11-13).

Results

Demographics of patients and controls

This prospective study included 96 patients with obstructed defecation and 20 normal subjects as a control group. Patients were 49 (51%) males and 47 (49%) females, with male to female ratio 1.04: 1 and mean age of 42.6 years ± 16.43, while the control group included 24(60%) males and 16 (40%) females with a mean age of 38.26 ± 8.34. The demographic data of the patients are illustrated in table (1).

Analysis of patients' symptoms and results of clinical examination

All patients had chronic constipation for a mean duration of 7.7 ± 2.6 years (range from 1-15 years). Patients were allocated after clinical examination and investigations into three subgroups; 18 patients with anismus, 37 patients with rectocele, and 41 patients with internal rectal intussusception. Forty asymptomatic subjects were assigned in the control group.

According to MNCS, the dominant symptom in patients with ODS was dull rectal pain which was the complaint of 88 (91.6%) patients while the least symptom in frequency was straining less than 25% of time of defecation, which existed in 38 (39.5%) patients only. The number of patients who were positive to each criterion of the MNCS is illustrated in table (3). As for the control group, the dominant symptom was straining less than 25% of defecation time, which was reported by 14 (35%) subjects (See table 2).

Clinical examination revealed that 42 (43.75%) patients had painful rectal examination, while only 16 (16.6%) patients had spasm in the anal sphincters during digital rectal examination (DRE). The number of patients who had positive signs during clinical examination is illustrated in table (3).

Correlation of MNCS with findings of physiological investigations

The Mansoura constipation score was compared with the objective findings of the investigations done for the patients including anorectal manometry, defecography and colon transit time. As for patients in anismus group, the defecography revealed accentuated puborectalis notch and acute anorectal angle during evacuation and manometry revealed an elevated mean resting and squeeze anal pressures, the mean Mansoura score was 10.38 ± 1.97.

As for patients with rectal intussusception, defecography revealed circumferential descent of rectal wall more than 4 mm into the anal canal, their mean Mansoura score was 9.78±1.92.

Finally, for patients with anterior rectocele, anterior herniation of rectal wall more than 3 cm in diameter was seen in defecography, and their mean Mansoura score was 9.67 ± 1.44, which indicates that MNCS predicted constipation accurately in all patients with ODS in the three subgroups.

Measuring Agreement between the three scoring systems

To measure the agreement between the three scores for each patient, the results of each score were expressed as percentages of the total score for each scoring system (total Mansoura = 13; total KESS = 39; total Wexner = 30). Agreement between the three scores was measured by subtracting the percentage scores of Mansoura score from Wexner percentage scores and then subtracting it from KESS percentage scores. 95% limits of agreement was defined as 1.96 times the standard deviation of the differences.

The resulted scoring of MNCS was compared with other scoring of Wexner and KESS systems in the 3 subgroups and in the control group, which showed strong association between the three scores, (p value < 0.05) as illustrated in tables 4-7.

Correlation of MNCS with Wexner and KESS scores

Scores were normally distributed on three systems and then analyzed using Pearson's linear correlation test which revealed that the mean scores of the three scoring systems were highly correlated. The correlation coefficient between MNCS and Wexner score was 0.9977, while the correlation coefficient between MNCS and KESS score was 0.9983 with a highly significant p value (<0.0001). The 95 % limits of agreement were ± 14 % (See tables 8, 9).

Analysis of each criterion of MNCS

The mean total MNCS in patients with ODS was 9.94±1.77 (range, 4-12) compared with a mean of 0.95±0.83 in the control group (range, 0-3).

The percentage of patients who were positive to each criterion of the MNCS was compared with the percentage of the controls who were positive to each criterion and the results were statistically significant (p value < 0.05) except for straining less than 25% of time of defecation (p value = 0.7002).

Also the percentage of patients with ODS who were positive for all criteria (25%) was compared with the percentage of controls who were positive to all criteria (0%) with p value of 0.012; Indicating the ability of the score to distinguish the constipated patient from the normal subject as in each criterion of the score and the overall score (See table 10).

Sensitivity for prediction of constipation

MNCS predicted constipation in 96 (100%) patients of the ODS group and in four (10%) subjects of the control group, thus 98.28 % of cases overall were predicted accurately with a significant p value of < 0.0001.

While the Wexner score predicted constipation in 95 (98.9%) patients of the ODS group and in two (5%) subjects of the control group, thus of 97.4% of cases overall were predicted accurately with also a significant p value of less than 0.0001 (See tables 11, 12).

As the KESS score did not provide a definition of constipation or a cut off value for it in the score, prediction of constipation in ODS and control groups could not be calculated and verified.

Tables

Table (1). Age and sex distribution among the studied groups

Age	Anismus		Rectocele		Rectal Intussusception		Control group	
	Male	***Female***	***Male***	***Female***	***Male***	***Female***	***Male***	***Female***
< 20	-	-	-	1	5	-	-	-
20-30	2	-	1	4	5	-	4	6
30-40	7	1	-	14	7	2	14	8
>40	6	2	-	17	16	6	6	2
Total	15	3	1	36	33	8	24	16

Table (2). Number of patients positive to each criterion of MNCS

Group (No.)	Dull rectal pain	Use of enemas once/w	Digitations once/ w	Straining <than 25%	Sense of incomplete evacuation	Straining >than 25%	<3 motions per week	Sense of obstruction	Habitual difficulty with liquid stool
Anismus (18)	17	16	12	4	15	14	6	18	15
Intussusceptio (41)	37	28	30	12	38	29	25	39	36
Rectocele (37)	33	29	11	22	26	15	14	31	18
Total (96)	87	73	53	38	79	58	45	88	69

- MNCS= Mansoura numeroalphabetic constipation score

Table (3). Patients with positive signs during clinical examination

Clinical sign	Number of positive patients
Paradoxical contraction of puborectalis	18
Recto-anal intussusception	20
Anterior herniation of rectal wall	37
Painful examination	42
Spasm of the anal sphincters	16

Table (4). Results of scoring systems (KESS, Wexner, and MNCS) in patients with anismus.

Scoring system	Mean score	SD	P value	Scoring system	Mean score	SD	P value
Wexner	23.27 (77.59%)	4.48	0.052	**KESS**	31.27 (80.17%)	6.51	0.872
MNCS	10.38 (79.91%)	1.97		**MNCS**	10.38 (79.91%)	1.97	

Table (5). Results of scoring systems (KESS, Wexner, and MNCS) in patients with rectal intussusception.

Scoring system	Mean score	SD	P value	Scoring system	Mean score	SD	P value
Wexner	23 (76.6%)	4.02	0.047	**KESS**	30.19 (77.4%)	5.79	0.0235
MNCS	9.78 (75.2%)	1.92		**MNCS**	9.78 (75.2%)	1.92	

Table (6). Results of scoring systems (KESS, Wexner, and MNCS) in patients with rectoceles.

Scoring system	Mean score	SD	P value	Scoring system	Mean score	SD	P value
Wexner	21.1 (70.36%)	3.92	<0.0001	**KESS**	28.1 (72%)	4.36	0.002

MNCS	9.67 (74.42%)	1.44		**MNCS**	9.67 (74.42%)	1.44	

Table (7). Results of scoring systems (KESS, Wexner, and MNCS) in the control group

Scoring system	**Mean score**	**SD**	**P value**	**Scoring system**	**Mean score**	**SD**	**P value**
Wexner	3.1 (10.33%)	1.41	<0.0001	**KESS**	4.74 (12.15%)	1.34	<0.0001
MNCS	0.95 (7.3%)	0.83		**MNCS**	0.95 (7.3%)	0.83	

Table (8). The correlation coefficient between the mean MNCS and the mean Wexner score in both patients and control group

Group	**Mean MNCS**	**Mean Wexner score**	**Correlation Coefficient**	**P value**
Anismus	10.38 (79.91%)	23.27 (77.59%)	0.9977	<0.00001
Rectal intussusception	9.78 (75.2%)	23 (76.6%)		
Rectocele	9.67 (74.42%)	21.1 (70.36%)		
Obstructed defecation (Total score)	9.94 (76.48%)	22.45 (74.85%)		
Control group	0.95 (7.3%)	3.1(10.33%)		

Table (9). The correlation coefficient between the mean MNCS and the mean KESS score in both patients and control group

Group	**Mean MNCS**	**Mean KESS score**	**Correlation Coefficient**	**P value**
Anismus	10.38 (79.91%)	31.27 (80.17%)	0.9983	<0.00001
Rectal intussusception	9.78 (75.2%)	30.19 (77.4%)		
Rectocele	9.67 (74.42%)	28.1 (72%)		
Obstructed defecation (Total score)	9.94 (76.48%)	29.85 (76.5%)		
Control group	0.95 (7.3%)	4.74 (12.15%)		

Table (10). Percentage of patients and asymptomatic controls positive for each criterion of MNCS

Group (Number)	**Obstructed Defecation (96)**	**Control (40)**	**P value**
Dull rectal pain	87 (90.6%)	10 (25%)	<0.0001
Use of enema once/week	73 (76%)	0	<0.0001
Digitations once/ week	53 (55.2%)	0	<0.0001
Straining <than 25% of defecation time	38 (39.5%)	14 (35%)	0.7002
Sense of incomplete evacuation	79 (82.2%)	6 (15%)	<0.0001
Straining >than 25% of defecation time	58 (60.4%)	0	<0.0001
Less than 3 motions per week	45 (46.8%)	2 (5%)	<0.0001
Sense of obstruction	88 (91.6%)	2 (5%)	<0.0001

Habitual difficulty with liquid stool	69 (71.8%)	0	<0.0001
All criteria	24 (25%)	0	<0.012

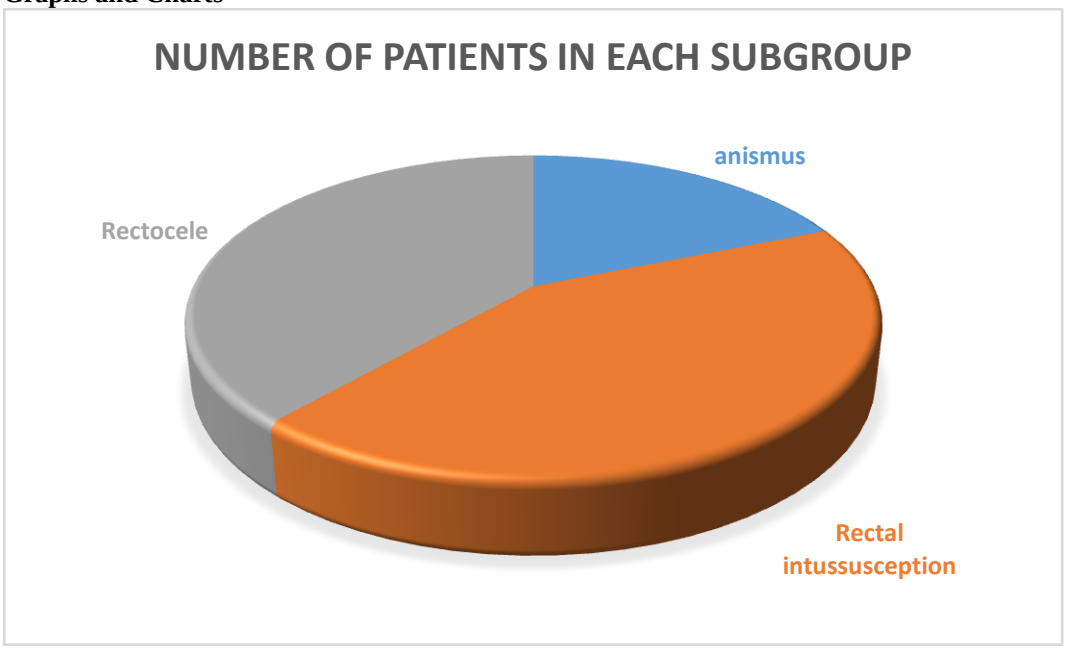
Table (11). Prediction of constipation in ODS and control groups – MNCS

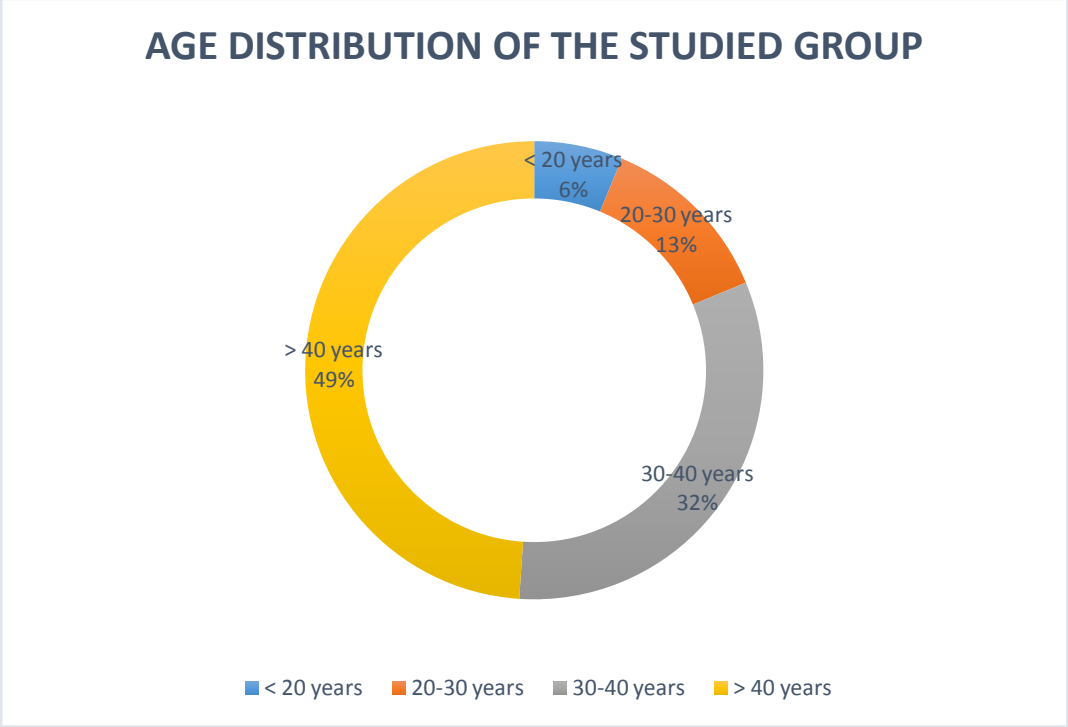
Group	Predicted constipation	Unpredicted constipation	P value
ODS	96 (100%)	0	<0.0001
Controls	4 (10%)	36 (90%)	

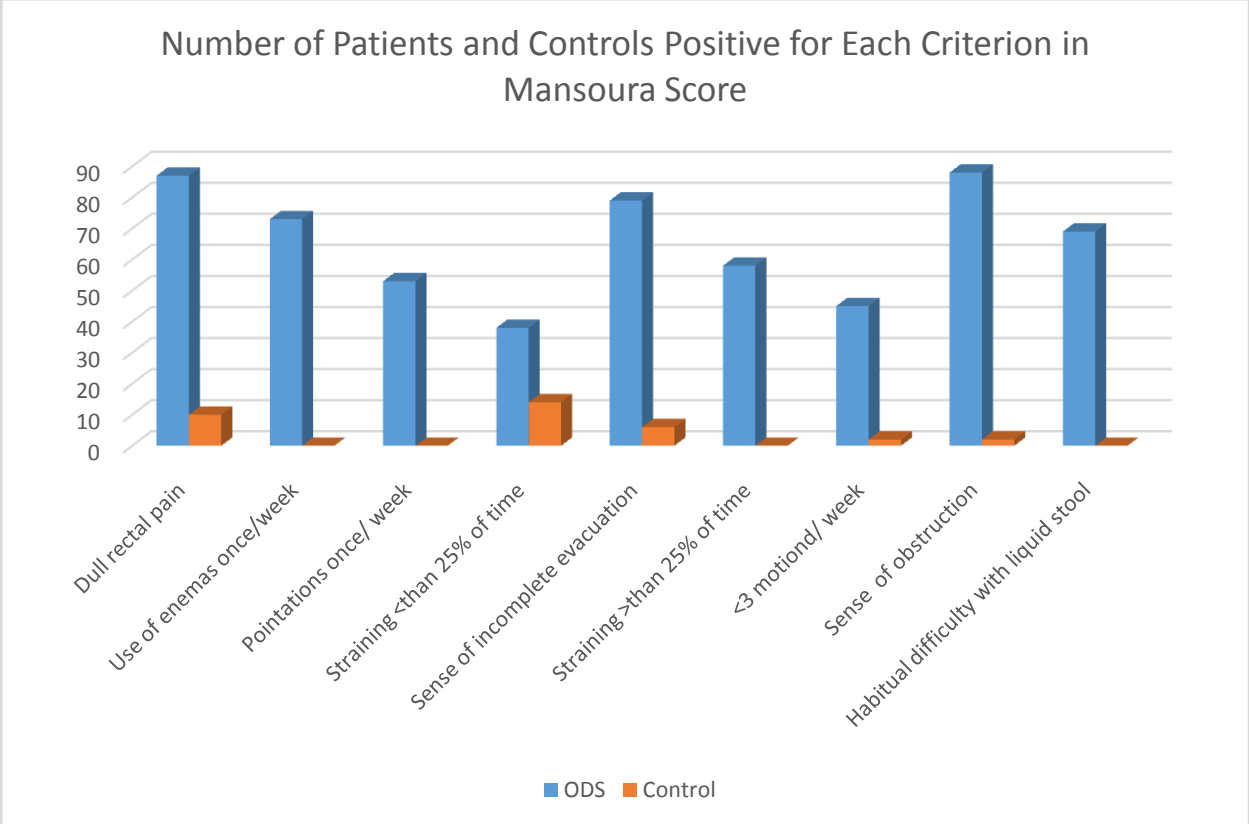
Table (12). Prediction of constipation in ODS and control groups – Wexner score

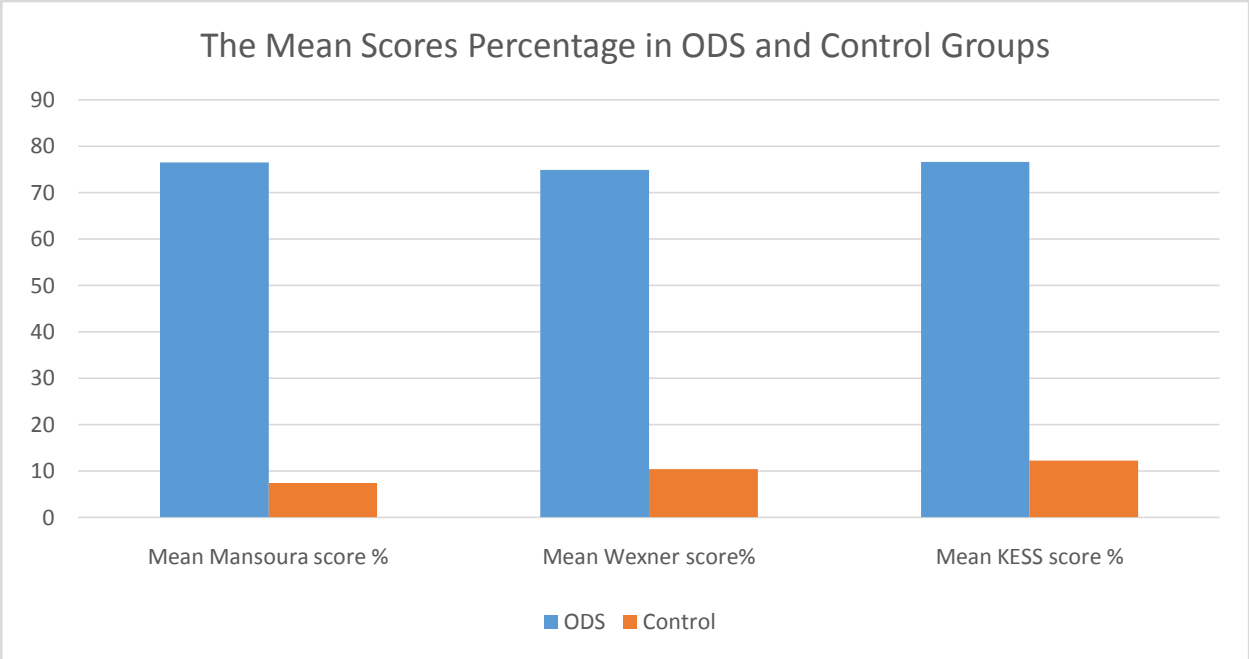
Group	Predicted constipation	Unpredicted constipation	P value
ODS	95 (98.9%)	1 (1.1%)	<0.0001
Controls	2 (5%)	38 (95%)	

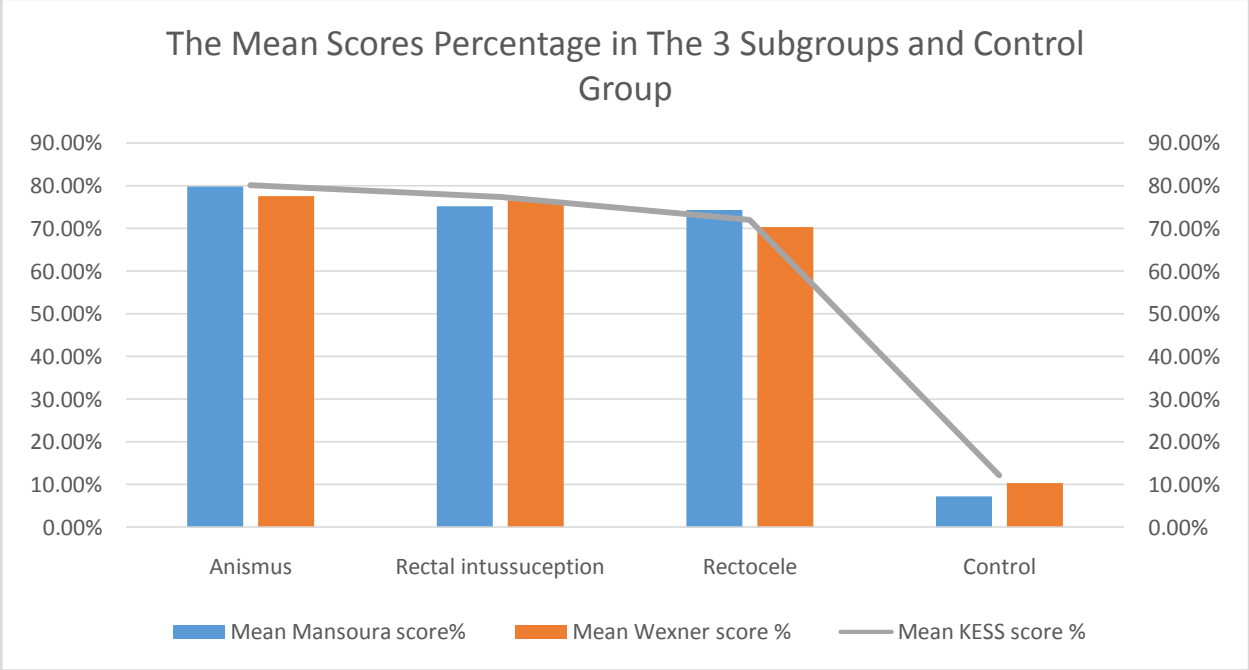
Graphs and Charts




AGE DISTRIBUTION OF THE STUDIED GROUP
< 20 years 6%
20-30 years 13%
30-40 years 32%
> 40 years 49%
< 20 years
20-30 years
30-40 years
> 40 years


Number of Patients and Controls Positive for Each Criterion in Mansoura Score
90
80
70
60
50
40
30
20
10
0
Dull rectal pain
Use of enemas once/week
Pointations once/ week
Straining <than 25% of time
Sense of incomplete evacuation
Straining >than 25% of time
<3 motiond/ week
Sense of obstruction
Habitual difficulty with liquid stool
ODS
Control





Discussion

Several attempts have been made to study constipation. After surveying 789 students and hospital employees ***Drossman et al*** found that 17.5% of them strained at stool more than 25 % of the time. This study assessed abdominal pain, distention, and incomplete evacuation, yet the aim was to diagnose irritable bowel syndrome (IBS) rather than constipation (Drossman et al., 1982).

Pemberton et al., demonstrated the importance in distinguishing slow transit constipation from pelvic floor disorders. Specifically, they found that among 277 investigated patients of constipation, 10 % had slow transit constipation; 13 % had pelvic floor dysfunction, 5 % had both and 70 % of patients had IBS (Pemberton et al., 1991).

In their study, ***Grotz et al.,*** confirmed that some parameters of constipation scores are unreliable when used alone to define constipation. For example: stool frequency could not be used alone to assess presence of constipation as it is affected by subjective factors (Grotz et al., 1994).

Currently no single measure is considered perfect in evaluating constipation. Rome III criteria is used as an objective method for evaluation of constipation, yet it cannot differentiate between different types of constipation or to evaluate their severity. The aim of scoring systems is to help in planning the treatment strategies, provided that they have a cut off score, hence without this cut off score, it is not feasible to use scoring systems for deciding treatment plan or evaluating the outcome (Sharma & Agarwal, 2012).

Several scores were designed to evaluate constipation, one of them was the Constipation Assessment Scale (CAS) which is an eight-item self-report measure designed to assess the presence and severity of constipation in cancer patients taking opioids and pregnancy. A three-point scale was used (0=no problem, 1=some problem, 2=severe problem). Total score is calculated ranging from 0 where no constipation to 16 indicating severe constipation with a score of more than one defining constipation (Frank et al., 1999).

The Patient Assessment of Constipation - Symptom (PAC-SYM) evaluates both frequency of symptoms and severity of chronic constipation. It is a self-report scale composed of 12 items, divided into three subscales according to symptoms whether abdominal, rectal or stool. Each item gets a score of 0-4, with four indicating the maximum symptom severity. Total score ranges from 0 to 48 (Longo, 2004).

The Visual Scale Analog Questionnaire (VSAQ) also assess the frequency and severity of constipation symptoms. It comprises five items, two of these items, stool consistency and straining, are given a score of 1 to 5 points. The remaining three items, presence of constipation, duration of constipation, incomplete evacuation, are rated on a 0-10 scale. The cut-off score for constipation is a score of more than three (McMillan & Williams, 1989).

In a study made on 232 patients by ***Agachan et al.,*** they have defined eight parameters that were significant in predicting constipation and they established the Wexner scoring system. After that the patients were scored and it was found that when scores increased, a corresponding significant increase in severity of constipation was noted, thus validating the applicability of Wexner constipation scoring system (Agachan et al., 1996). Currently, Wexner score is considered the best available measure to evaluate the severity of ODS (Sharma & Agarwal, 2012).

Knowles et al., designed a new scoring system known as the Knowles Eccersly Scott symptom questionnaire score (KESS). Four of the KESS questions were based on the common guidelines of Rome criteria, with a score of one or more points signaling fulfillment of each criterion (Knowles et al., 2000) While the KESS score acknowledged that constipation is a poorly defined clinical symptom, it did not provide a definition of constipation which makes evaluation of content validity nearly impossible (Sharma & Agarwal, 2012).

The KESS score asked patients about their bowel frequency and other symptoms while taking their current medication. The only question that may not be contemporary for all patients is the request for description of stool consistency without laxatives. The questionnaire also recognizes the possibility of affection of the total score by bloating, loss of appetite and nausea. KESS score was validated by comparison with the Wexner score. Then it had been validated as a tool for distinguishing constipated patients with a proven pathophysiologic abnormality from those with irritable bowel syndrome, predicting 96 % of cases correctly (Knowles et al., 2000).

In our study, we defined nine parameters, which we believed they were significant in predicting constipation. After identifying these parameters and establishing a scoring system, patients and controls were scored. The cut off value which defined constipation was a total score of more than 2. As scores increased, a corresponding increase in severity of constipation was noticed, which validates the applicability of this constipation scoring system.

The Mansoura numeroalphabetic score or *Farid score* - named after its inventor- is a modified version of Wexner and KESS scores, used in assessment of constipation. Changes in questions were based on our clinical impression of which symptoms most likely to be specific to constipation and useful especially in cases of obstructed defecation, Furthermore, some questions were modified to facilitate the questionnaire.

The MNCS consists of major and minor criteria. Each criterion of both major and minor criteria gets points then the sum of all points obtained in all criteria (0-13) is classified into 5 stages (0, A, B ,C and D) thus it is called a numeroalphabetic system , this alphabetic staging deals with each patient more easier either whether surgery is required or not and also in the follow up period .

The frequency of bowel movements is considered a major criterion , if patients had less than 3 bowel movements per week this was assigned as 2 points , which is considered easier than the Wexner score and the KESS score which ask the patient about the number of bowel movements per day , week or month .

The straining effort during bowel action can be used as a minor criterion if it takes less than 25% of time or only at time of defecation , while it is considered a major criterion if it takes more than 25% of the bowel action time , in comparison with Wexner score which assesses the difficulty of evacuation according to the patient's view (Never , Rarely , sometimes , usually and Always) which is subjective and might not be accurate as it depends on the individual variation between the patients .

Also the MNCS includes the sense of anal obstruction during defecation over 25% of the bowel action, which is usually the main complaint of patients with obstructed defecation. The MNCS considers it a major criterion if present while the Wexner and KESS scores do not include this essential criterion in their assessment of patients with obstructed defecation.

The MNCS adds the habitual difficulties of defecation even with liquid stool as a major criterion, which is also another usual complaint of patients with obstructed defecation, the Wexner score does not include this criterion while the KESS score focus on the stool consistency without laxatives without asking about defecation difficulties.

The minor criteria of the MNCS includes dull rectal pain which also characterizes patients with obstructed defecation whereas the Wexner and KESS score include abdominal pain which is not specific to obstructed defecation. The method of assistance of defecation whether by enemas or digitations are considered 2 separate minor criteria in MNCS as the patient tries to relieve the obstruction either manually, by enemas or by both if the sense of obstruction was severe, while digitations and use of enemas are included in one criterion in Wexner and KESS score. Finally, the sense of incomplete evacuation is the last minor criterion in MNCS, Wexner and KESS scores.

According to Knowles et al., there is no known biologic or physiologic marker for the severity of constipation, so it is unclear what the significance of a total score is (Knowles et al., 2000). On the other hand, the Mansoura score may be used as an indicator of surgery (stages C and D indicating surgical intervention) and to monitor and compare the efficacy of different treatment modalities, yet this requires further investigation to confirm its clinical utility. Also the KESS score is rather complicated, which may limit its clinical utility (Sharma & Agarwal, 2012), on the other hand, the numeroalphabetic nature of MNCS makes it far easier to apply and interpret clinically.

In our study we compared the mean score of the 3 scoring systems in both patients and control groups and then we calculated the correlation coefficient between MNCS and Wexner score then between MNCS and KESS score; and we found a strong association proving that the Mansoura score is strongly correlated (>95%) with the other 2 scores. By comparing both patients and controls regarding each criterion of the MNCS and the overall score, the results were highly significant except for straining less than 25% of time. Thus, the MNCS can be validated as reliable scoring system for assessment of constipation in patients with ODS and differentiation between the constipated patient from the normal subject.

Conclusion

The Mansoura numeroalphabetic score is a simple, modified version of Wexner and KESS scores, it has the advantage of accurate, rapid and easy assessment of obstructed defecation and predicting cases which are in need for surgical intervention, thus it can be applied as a simple, rapid and easy method of assessment of constipation in ODS patients in the outpatient clinics.

The utility of MNCS for indicating surgical intervention according to staging and in follow-up to detect postoperative improvement needs further research to confirm its benefit on a clinical background.

References

1. ***Agachan F, Chen T, Pfeifer J, Reissman P, Wexner SD (1996):*** A constipation scoring system to simplify evaluation and management of constipated patients. Dis Colon Rectum; 39, pp: 681–685.
2. ***Drossman DA, Sandier RS, and McKee DC, Lovitz AJ (1982):*** Bowel patterns among subjects not seeking health care. Gastroenterology; 83:529-34.
3. ***Drossman DA, Thompson WG, Talley NJ, et al (1990):*** Identification of sub-groups of functional gastrointestinal disorders. *Gastroenterol Int*; 3: 159-72.
4. ***Frank L, Kleinman L, Farup CE, Taylor L, Miner P Jr (1999):*** Psychometric validation of a constipation symptom assessment questionnaire. Scand J Gastroenterol; 34:870–877.
5. ***Grotz RL, PembertonJH, Talley NJ, and Rath DM, Zinsmeister AR (1994):*** Discriminant values of psychological distress, symptom profiles, and segmental colonic dysfunction in outpatients with severe idiopathic constipation. Gut; 35:798-802.
6. ***Harari D, Gurwitz JH, Avorn J, Bohn R, Minaker KL (1996):*** Bowel habit in relation to age and gender. Findings from the National Health Interview Survey and clinical implications. Arch Intern Med; 156:315–320.
7. ***Higgins PDR, Johanson JF (2004):*** Epidemiology of constipation in North America: a systematic review. Am J Gastroenterol; 99:750–759.
8. ***Hinton JM & Lennard-Jones JE, (1968)***. Constipation: definition and classification. Postgraduate Medical Journal; 44, pp: 720-723.
9. ***Knowles CH, Eccersley AJ, Scott SM, Walker SM, and Reeves B, Luniss PJ (2000):*** Linear discriminant analysis of symptoms in patients with chronic constipation: validation of a new scoring system (KESS). Dis Colon Rectum; 43:1419–1426.
10. ***Lembo A & Camilleri M (2003):*** Chronic constipation. N Engl J Med.; 349:1360-1368.
11. ***Longo A (2004):*** Obstructed defecation because of rectal pathologies. Novel surgical treatment: stapled transanal rectal resection (STARR). Annual Cleveland Clinic Florida Colorectal Disease Symposium.
12. ***McMillan SC, Williams FA (1989):*** Validity and reliability of the Constipation Assessment Scale. Cancer Nurs; 12:183 –188.
13. ***Pemberton JH, Rath DM, Ilstrup DM (1991):*** Evaluation and surgical treatment of severe chronic constipation. Ann Surg; 214:403-13.
14. ***Prather CM, Ortiz-Camach CP (1998):*** Evaluation and treatment of constipation and fecal impaction in adults. Mayo Clin Proc; 73:881.
15. ***Sharma S & Agarwal B (2012):*** Scoring Systems in Evaluation of Constipation and Obstructed Defecation Syndrome (ODS). JIMSA;Vol. 25 No.1.
16. ***Thompson WG, Longstreth GF, Drossman DA, Heaton KW, Irvine EJ, Muller-Lissner SA (1999):*** Functional bowel disorders and functional abdominal pain. Gut; 45(suppl 2): II, pp: 43–***gins PDR, Johanson JF (2004):*** Epidemiology of constipation in North America: a systematic review. Am J Gastroenterol; 99:750–759.