ORIGINAL ARTICLE

VALIDATION OF ROMANIAN VERSION OF LARS SCORE

O. Andronic[1,2], Georgiana Radu[1], D.N. Paduraru[1,2], D. Ion[1,2], Alexandra Bolocan[1,2], S.M. Oprescu[1,2]

[1]"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania
[2]University Emergency Hospital of Bucharest, Romania

Corresponding author: Andronic Octavian
E-mail: andronicoctavian@gmail.com

Abstract

LARS is a widely spread complication in patients suffering from rectal cancer who had undergone a low anterior resection. Until recently it was very difficult to adequately quantify the impact that this syndrome has on patients' quality of life. In 2012, a special score was developed and validated in Denmark widely known as the LARS score. Since then, it is on the road to be validated in many countries all around the world. Our study aimed to test its applicability on patients from Romania. The results were conclusive with available literature, thus proving its usefulness and validation in our country.

Keywords*: low anterior resection, rectal cancer, LARS score, LARS*

Introduction

First mentions about rectal cancer appear to have been made in antique times, when doctors from different cultures knew how to identify the disease but had no tools to deal with it. Efforts to treat the cancer with palliative or even curative intentions were made throughout the entire history, most of the time with small or no results. The first successful operation was performed by Miles at the beginning of the 20th century. Miles' surgery proposed an abdomino-perineal resection with a permanent stoma. Even though it was a complicated operation which drastically decreased the patient's quality of life and created many digestive and urogenital complications, it fulfilled its main purpose of prolonging the life. Few years later another surgeon, Donald Balfour, made the first colorectal anastomosis for an accidental sigmoid colon perforation and proposed using his method for neoplasms. In the same time Henri Hartmann was developing the operation that still has his name – colonic segmental resection with the preservation and closure of the distal rectal portion. These two last surgeries have been the premise for the low anterior resection with a colorectal anastomosis. This surgery is still utilized today in most cases of rectal cancer. The concept of "total mesorectum excision" was introduced by Heald around 1982 (almost 35 years ago) and has revolutionized rectal cancer's treatment by allowing the sphincter's preservation in more than 80% of the cases [1].

According to GLOBOCAN, colorectal malignancy is the third cause of cancer-related death worldwide after prostate and pulmonary neoplasms in men and the second cause of death after breast neoplasm in women. In 2018 there were 1.8 million new cases (10% from all neoplasms) of rectal cancer and 880.792 people have died because of it [2].

Initially, the main purpose for surgery in rectal cancer was saving the patient's life. After

the introduction of more modern approaches and the sphincter sparring surgery, the focus has evolved to not only caring about saving the patient's life, but to also giving him a quality of life as high as possible in given circumstances. But how can one quantify the quality of life (QoL) for a patient that has just had major surgery and lost a portion of his rectum along with other complications related to chemotherapy and radiotherapy? Low anterior resection syndrome is a constellation of symptoms, such as fecal incontinence or urgency, frequent or fragmented bowel movements, emptying difficulties, and increased intestinal gas, that occur after a sphincter-sparing resection (i.e., anterior resection) of the rectum [[3]]. In order to measure its severity, dr. KJ Emmertsen from the Aarhus University Hospital in Denmark has developed and validated a score system widely known as the LARS score. The Wexner incontinence score, the Rockwood Fecal Incontinence Severity Index, or the St Marks' Fecal Incontinence Grading Score were already in use but the need for a simpler score that can measure the complicated dysfunctions in LARS was needed [4].

After being created in Denmark in 2012, the score has been translated in other languages and validated in more and more countries every year, thus proving its eligibility and utility in the management of patients with rectal cancer. Our aim was to test its applicability for Romanian patients.

Materials and Methods

The LARS score consists of 5 questions related to the involuntary release of flatulence, accidental leakage of stool, number of bowel movements every day, how often do patients have bowel movements in the first hour after the initial event and the frequency of imperious need to use the bathroom. Almost all of them have 3 possible answers, only one (regarding the frequency of the need to use the bathroom) has 4. Every answer gets points which are added in the end, obtaining the final LARS score. The total score ranges from 0 to 42, with values of 0-19 representing "no LARS", while 20-29 represent "minor LARS" and 30-42 represent "major LARS" (Table 1).

For our purpose, the score was independently translated by 3 researchers from Romanian to English. These first 3 translations were then compiled to form one version. This intermediate version was translated from English to Romanian again by 3 other researchers in order to be assured that the information and the original meaning remained the same. The results were compiled and a final version of the score, in Romanian, was proposed to patients (Figure 1) (Appendix 1).

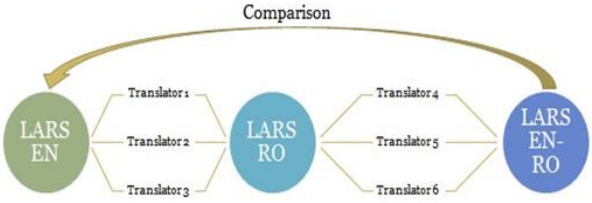

Figure 1 – LARS score translation

Signification	LARS score
No LARS	0-19
Minor LARS	20-29
Major LARS	30-42

Table 1 – LARS score signification

Our study is retrospective, observational, descriptive and unicentric. It was conducted in the 3rd General Surgery Clinic from the University Emergency Hospital from Bucharest from the 1st January 2016 - 31st December 2018 and included 52 patients (31 males, 21 females). All patients were above 18 years old and received a low anterior resection 1-3 years prior. Out of all 52 patients who received a low anterior resection surgery for their rectal cancer, only 34 agreed to complete the LARS score. 6 patients gave reasons why they refused to complete the LARS questionnaire: tiredness (4 patients), physical pain (1 patient) and sadness caused by health problems (1 patient).

In what concerns tumor stage, 14 of our patients were in stage I TNM (26,92%), 23 patients were in stage II TNM (44,23%) and 15 patients were in stage III TNM (28,84%).

Results

General considerations

In what concerns the age of our patients, most of them were situated in the 60-70-year-old interval (21 cases representing 51,92%). The youngest patient was 35 years old and the oldest 90. The average age for male patients was 60,81 years and for the female patients 65,52 years. 21 patients came from rural areas while 31 from urban areas.

The number of patients who had a low anterior resection for their rectal cancer grew from 15 in 2016 to 20 in 2018 (33,33% growth) (Figure 2).

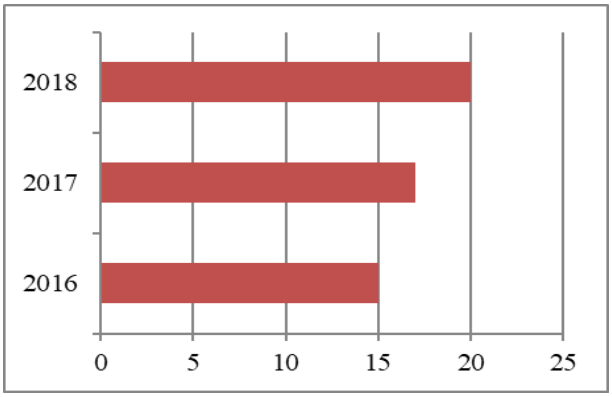

Figure 2 – Distribution of patients according to the year they suffered the intervention

Neoadjuvant therapy

In our group of patients, the indication for neoadjuvant or adjuvant therapy was made by an oncology specialist, taking into consideration the biological and imagistic parameters as well as the TNM stage of the tumor. A total of 30 patients received neoadjuvant radiotherapy (57,69%), 31 patients received neoadjuvant chemotherapy (59,61%) and 11 patients (21,15%) received no neoadjuvant therapy at all. From all stage I TNM patients, 4 (28,57%) have received both treatments while 10 (71,43%) of them did not need any one of them prior to surgery. In the stage II TNM group, out of 23 total patients, one patient (4,34%) received only radiotherapy, 21 patients (91,30%) received only chemotherapy and one patient (4,34%) did not receive any treatment. From the third and last group of patients, those with stage III TNM, all 15 patients have received at least one form of neoadjuvant therapy. 2 patients (13,33%) had been treated with only chemotherapy prior to surgery (Figure 3).

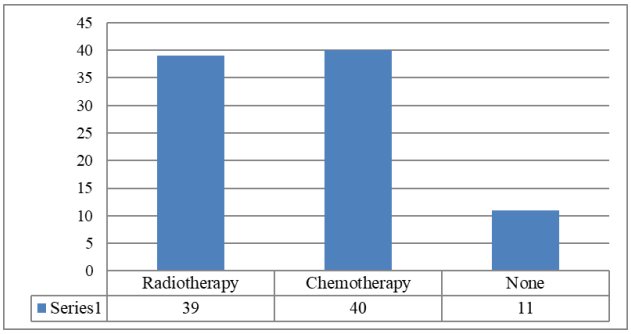

Figure 3 – Patient distribution according to neoadjuvant therapy

Distance from the anal orifice

It is important to measure the distance between the tumor and the anal orifice in order to decide the level of the anastomosis. In our group of study, the average distance from the inferior tumor margin to the anal opening was 8,63 cm, with a maximum of 19cm and a minimum of 0 cm prior to any treatment.

Tumor size

The biggest tumor in our study group had a 14cm height, while the smallest one only 1cm. The average height of tumors was 4,93cm. There are no studies at the moment regarding the connection between the tumor size and LARS.

LARS questionnaire

Only 34 patients (65,38%) out of 52 have agreed to answer the questions in the LARS score.

For the first question regarding the capability to control flatulence, most patients (15 representing 44,11%) have answered that they may involuntarily lose gas less than once a week. 12 patients (35,29%) have stated that this happens more often than once a week and only 6 patients did not involuntarily lose any flatulence at the time.

For the second question concerning the event of accidentally losing liquid bowel 21 patients (61,76%) answered that this happens more than once a week, while 12 patients (35,29%) stated that this does not happen to them.

The third question is about the daily number of bowel movements. Most patients reported having less than 1 bowel movement/day (12 patients representing 35,29%). Least patients (5 representing 14,70%) have reported having 1-3 bowel movements/day.

In what concerns the fourth question, regarding the need to go to the bathroom in the first hour after an initial bowel movement, most patients (17 representing 50%) stated that this doesn't ever happen to them. For 10 patients (19,41%) this event happens less than once a week and for 6 patients it happens more than once a week. As we can see, the number of patients who do not need to use the toilet again after an initial bowel movement in less than an hour is more than double than the number of patients who do.

The last question in the LARS score refers to the frequency of urgent bowel movements and need to rapidly find a toilet nearby. Most patients (16 representing 47,05%) said that they do feel an urgent need to use the bathroom less than one time/week. The least patients (6 representing 17,64%) said that this event happens to them less than once a week.

In the end, each patient received a score in correspondence to his answers. We managed to classify patients into 3 groups according to their final score (Table 2).

LARS	Number of patients
No LARS	11 (32,35%)
Minor LARS	10 (31,25%)
Major LARS	13 (38,23%)

Table 2 – Patients' distribution according to LARS signification groups

The research concluded that 11 patients had no LARS (representing 32,35%), 10 patients had minor LARS (32,25%) and 13 patients had major LARS (38,23%).

Discussions

Most studies available in the literature on quality of life in patients with rectal cancer focus on the effects of surgery, but patient support and counseling are very important from the time of diagnosis. Most patients who opted for sphincter preservation surgery will develop a change in bowel and defecatory functions as well as urogenital and sexual troubles. All these post-operatory complications are grouped under a common name: low anterior resection syndrome. The LARS score is a useful tool in quantifying the implications of this syndrome on the quality of life of our patients. The study has already been validated into Danish, Spanish, German, and Swedish with great results [5].

Study	Country	Year	Patients	No LARS	%	Minor	%	Major	%
Xiao-ting Hou et al. [7]	China	2015	102	24	23.52	22	21.56	56	54.90
Carrillo et al. [8]	Spania	2015	132	45	34.09	25	18.93	62	46.96
Sturiale et al. [9]	Italia	2016	93	49	52.68	25	26.88	19	20.43
Samalavicius et al. [10]	Lituania	2016	111	27	24.32	26	23.42	55	49.54
Ekkarat et al. [11]	Thailanda	2016	129	84	65.11	22	17.05	23	17.82
Hughes et al. [12]	UK	2017	68	19	27.94	27	39.70	38	55.88
Jimenez-Gomez et al. [13]	Spania	2017	184	44	23.91	36	19.56	104	56.52
Trenti et al. [14]	Spania	2018	152	19	12.5	39	25.65	94	61.84
Rama et al. [15]	Portugalia	2018	154	52	33.76	37	24.02	63	40.90
Current Study	**Romania**	**2019**	**34**	**11**	**32,35**	**10**	**31.25**	**13**	**38,23**

Table 3 – Other validation studies for the LARS score

Most of the patients included in our study were male (31 out of 52), thus confirming data from GLOBOCAN about the prevalence of rectal cancer in the male population [2].

The highest incidence of rectal cancer in our study group was seen in patients who were in the 6th and 7th decades of life, with a spike between 60-65 years. Recent literature shows a dramatic decrease in the age of onset of rectal cancer. This fact is also represented in our study where 6 patients (11,54%) are under 50 years old. The biggest problem in young patients with rectal cancer is that they do not meet the screening guidelines, so they have a lower chance to be diagnosed and treated in first stages [6].

Multiple colleagues from all around the world have successfully applied the LARS score in their countries acquiring similar results (Table 3), thus proving its validity and usefulness.

Conclusion

Treatments for rectal neoplasms have great results, prolonging the patient's life but decreasing its quality. Because it is certain now that we can save the patient's life using available treatments, more efforts should be made to improve one's quality of life afterwards. The most useful available tool for measuring digestive complications in patients who have undergone a low anterior resection is the LARS score, applied and validated in multiple countries. The present study proves its usefulness and validity for Romanian version of LARS score.

References

[1] Z. Liang, W. Ding, W. Chen, Z. Wang, P. Du, and L. Cui, "Therapeutic Evaluation of Biofeedback Therapy in the Treatment of Anterior Resection Syndrome After Sphincter-Saving Surgery for Rectal Cancer," Clin. Colorectal Cancer, vol. 15, no. 3, pp. e101–e107, 2016.

[2] F. Bray, J. Ferlay, and I. Soerjomataram, "Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries," pp. 394–424, 2018.

[3] J. Martellucci, "Low anterior resection syndrome (LARS)," UptoDate, 2019.

[4] K. J. Emmertsen, "Low Anterior Resection Syndrome Score," 2012.

[5] K. Jøssing, L. Miguel, E. Klaus, and K. Jøssing, "International validation of the low anterior resection syndrome score International Validation of the Low Anterior Resection Syndrome Score," vol. 259, pp. 728–734, 2014.

[6] P. M. Kasi, F. Shahjehan, J. J. Cochuyt, Z. Li, D. T. Colibaseanu, and A. Merchea, "Rising Proportion of Young Individuals with Rectal and Colon Cancer," Clin. Colorectal Cancer, vol. 18, no. 1, pp. e87–e95, 2019.

[7] X. Hou et al., "Validation of the Chinese version of the low anterior resection syndrome score for measuring bowel dysfunction after sphincter-preserving surgery among rectal cancer patients," Eur. J. Oncol. Nurs., vol. 19, no. 5, pp. 495–501, 2015.

[8] A. Carrillo et al., "Incidence and Characterization of the Anterior Resection Syndrome Through the Use of the LARS Scale (Low Anterior Resection Score)," Cirugía Española (English Ed., vol. 94, no. 3, pp. 137–143, 2016.

[9] A. Sturiale et al., "Long-term functional follow-up after anterior rectal resection for cancer," Int. J. Colorectal Dis., vol. 32, no. 1, pp. 83–88, Jan. 2017.

[10] N. E. Samalavicius, A. Dulskas, M. Lasinskas, and G. Smailyte, "Validity and reliability of a Lithuanian version of low anterior resection syndrome score," Tech. Coloproctol., 2016.

[11] P. Ekkarat, T. Boonpipattanapong, K. Tantiphlachiva, and S. Sangkhathat, "Factors determining low anterior resection syndrome after rectal cancer resection: A study in Thai patients," Asian J. Surg., vol. 39, no. 4, pp. 225–231, 2016.

[12] D. L. Hughes, J. Cornish, and C. Morris, "Functional outcome following rectal surgery—predisposing factors for low anterior resection syndrome," Int. J. Colorectal Dis., vol. 32, no. 5, pp. 691–697, May 2017.

[13] L. M. Jimenez-Gomez, E. Espin-Basany, M. Marti-Gallostra, J. L. Sanchez-Garcia, F. Vallribera-Valls, and M. Armengol-Carrasco, "Low anterior resection syndrome: a survey of the members of the American Society of Colon and Rectal Surgeons (ASCRS), the Spanish Association of Surgeons (AEC), and the Spanish Society of Coloproctology (AECP)," Int. J. Colorectal Dis., 2016.

[14] L. Trenti et al., "Quality of life and anterior resection syndrome after surgery for mid to low rectal cancer: A cross-sectional study," Eur. J. Surg. Oncol., vol. 44, no. 7, pp. 1031–1039, Jul. 2018.

[15] N. J. Rama, P. L. Ferreira, J. Pimentel, and T. Juul, "Validation of Portuguese version of the low anterior resection syndrome score," J. Coloproctology, vol. 39, no. 1, pp. 1–8, Jan. 2019.

[16] A. D. Croese, J. M. Lonie, A. F. Trollope, V. N. Vangaveti, and Y.-H. Ho, "A meta-analysis of the prevalence of Low Anterior Resection Syndrome and systematic review of risk factors," Int. J. Surg., vol. 56, pp. 234–241, Aug. 2018.

[17] A. M. Couwenberg et al., "Effect of Neoadjuvant Therapy and Rectal Surgery on Health-related Quality of Life in Patients with Rectal Cancer During the First 2 Years After Diagnosis," Clin. Colorectal Cancer, vol. 17, no. 3, pp. e499–e512, 2018.