

Endoscopic stenting of malignant biliary obstruction - effect on quality of life

Luiza-Cristiana Bițină

Centrul de Oncologie și Radioterapie „Sf Nectarie” Craiova

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Abstract

The most common symptoms of malignant biliary obstruction (MBO) include jaundice, pruritus, weight loss, anorexia, or even cholangitis. In order to improve these symptoms which may have a negative impact on a patient's quality of life (QoL), relief of malignant obstruction is required.

Endoscopic-guided stent placement represents the treatment of choice in the cases of unresectable MBO and its utility may be justified by the improvement in QoL of such patients.

Aim: Our objective was to provide a comprehensive point of view on palliative endoscopic management of MBO by emphasizing current data on causes of malignant biliary obstruction, types of stents used as well as the effect on QoL.

Materials and methods: We performed a search using PubMed, as well as Web of Science, on available studies that involved assessing QoL on MBO by using the terms: “quality of life”, “QoL”, “endoscopic stenting”, “malignant biliary obstruction”.

The main focus was finding proof that endoscopic stenting followed by successful biliary drainage improved patients' QoL which was evaluated by completing a QoL questionnaire before and after performing the endoscopic stenting.

Outcomes: The decompression of biliary obstruction, followed by successful biliary drainage is responsible for the improvement of symptoms such as jaundice, pruritus or weight loss, improvement that impact patients' QoL, as well.

Conclusion: The advances in endoscopic techniques, as well as the development of stents available nowadays, place endoscopic stenting in the first position in the management of MBO.

Keywords: “quality of life”, “QoL”, “endoscopic stenting”, “malignant biliary obstruction”.

Rezumat

Icterul, pruritul, scăderea ponderală, anorexia sau chiar colangita, se numără printre consecințele obstrucției biliare de cauză malignă, consecințe ce pot avea un impact negativ asupra calității vieții pacienților, astfel încât se impune dezobstrucția căilor biliare pentru ameliorarea simptomatologiei. Plasarea de stent sub ghidaj endoscopic reprezintă tratamentul de elecție în dezobstrucția căilor biliare, având ca scop ameliorarea icterului și a pruritului, rolul său fiind justificat de impactul asupra calității vieții pacienților.

Obiectiv: Scopul reviziei a fost expunerea unui punct de vedere obiectiv în ceea ce privește managementul endoscopic paliativ al obstrucției biliare maligne, punând accent pe cauzele obstrucției, tipurile de stenturi utilizate, precum și efectele asupra calității vieții.

Materiale și metode: Utilizând bazele de date PUBMED și Web of Science, am căutat studiile disponibile ce includeau evaluarea calității vieții pacienților în obstrucția biliară de etiologie malignă, utilizând termenii: “calitatea vieții”, “stentare endoscopică”, “obstrucție biliară malignă”.

Utilizarea stentării sub ghidaj endoscopic, urmată de drenaj biliar eficient este justificată de îmbunătățirea calității vieții pacienților, ce a fost evaluată prin completarea unui chestionar de calitate a vieții înainte și după stentare.

Rezultate: Dezobstrucția căilor biliare, urmată de drenajul biliar eficient, este responsabilă de îmbunătățirea simptomelor cum sunt icterul, pruritul sau scăderea ponderală, îmbunătățire ce are, de asemenea, impact asupra calității vieții pacienților.

Concluzii: Progresele tehnicilor endoscopice, împreună cu larga varietate de stenturi disponibile actual, plasează stentarea endoscopică pe o poziție fruntașă în managementul obstrucției biliare maligne.

Cuvinte cheie: “calitatea vieții”, “stentare endoscopică”, “obstrucție biliară malignă”.

Introduction

The most common symptoms of malignant biliary obstruction (MBO) include jaundice, pruritus, weight loss, anorexia, or even cholangitis. In order to improve these symptoms which may have a negative impact on a patient's quality of life (QoL), relief of malignant obstruction is required. Endoscopic-guided stent placement represents the treatment of choice in the cases of unresectable MBO. As regards the complications, stent insertion may be responsible for pancreatitis, cholangitis,

bleeding, perforations as well as stent migration. Even so, palliative management of MBO is strongly encouraged in order to relieve jaundice or pruritus and its utility may be justified by the improvement in QoL of such patients [1].

Our objective was to provide a comprehensive point of view on palliative endoscopic management of MBO by emphasizing current data on causes of MBO, the type of stent used, as well as the effect on QoL.

Causes of malignant biliary obstruction

Obstruction may occur at various levels within the biliary system. It could represent the initial presentation of the underlying disease, as it is the case of jaundice in pancreatic ductal adenocarcinoma, or it could arise during the progression of the malignancy. Most frequently, primary malignancies of the pancreatic head, bile duct, gallbladder, liver, or ampulla of Vater are responsible for malignant bile duct obstruction, with more than 90% of cases being caused by pancreatic cancer. Other primary tumours are also able to determine MBO by direct invasion, hilar lymph node metastasis, pancreatic, biliary, liver metastasis or peritoneal carcinomatosis. Although it is a common condition, MBO represents a challenge, not only in the diagnostic process, but in therapeutic management, as well [2,3]. Unfortunately, the malignancy causing biliary obstruction is frequently diagnosed at an advanced stage, leaving the palliative management of the symptoms, such as jaundice or pruritus, the main treatment option. The level of the biliary tree where the obstruction occurs, divided into hilar and distal biliary obstruction, establishes both the therapeutic treatment approach and the type of stent used in the relief of biliary obstruction [4]. Stent placement in hilar biliary obstruction is more challenging than in the case of distal obstruction, as it often requires bilateral stenting with the placement of two or more stents. In spite of that, stent placement followed by the relief of the malignant biliary duct stricture can be successfully performed even in obstruction caused by metastatic disease [1,5].

Types of stents

There are two main types of stents that could be used for the decompression of biliary obstruction:

Plastic stents (PS) are commonly used for the relief of biliary obstruction as they are safe, efficient and low-priced. Available in different sizes (7-12 Fr), shapes (straight, curved, single or double pigtail) and lengths (5-18 cm), they are placed along the stricture, assuring successful decompression of MBO in 90-95% of the cases. Unfortunately, plastic stents offer limited patency and regular replacement might be necessary in order to assure long-term drainage. Stent occlusion may occur, the risk increasing progressively after 3 months, being responsible for the reappearance of jaundice or cholangitis. Periodic stent replacement, at 3-month intervals, is necessary in order to assure stent patency and to reduce the risk of cholangitis [1,6].

Self-expanding metallic stents (SEMS) used in patients with inoperable MBO offer prolonged patency compared to PS due to a larger luminal diameter (30 Fr). SEMS can be uncovered, partially, or fully covered and they come in different sizes, shapes or delivery systems. Their utility should be reserved for patients with a life expectancy greater than 3-6 months as they are high-priced, unlike PS. Therefore, liver metastasis or ascites as predictors of short-term survival indicate the use of PS rather than SEMS [1,6].

Effect on quality of life

We performed a search using PubMed, as well as Web of Science, on available studies that involved assessing QoL on MBO by using the terms: "quality of life", "malignant biliary obstruction", "endoscopic stenting", "QoL".

Recent studies focused on demonstrating the effect of biliary stenting in MBO on QoL but more evidence is needed in order to support the utility of palliative management of biliary duct stricture. The main focus was finding proof that successful

biliary drainage by endoscopic retrograde cholangiopancreatography (ERCP) with endoscopic stent placement as the main palliative treatment option improved patients' QoL [7]. The research included patients with suspicion of MBO unresectable due to the characteristics of the tumour or inoperable due to the patient's characteristics, who underwent ERCP with stent placement, while QoL was evaluated by completing a QoL questionnaire at presentation, before performing the endoscopic stenting, as well as after the procedure, at re-evaluation [8].

Table 1 - Studies included in the review

Authors	Title	Type of questionnaire	Number of patients	Follow-up
Barkay O, Mosler P, Schmitt CM, Lehman GA, Frakes JT, Johanson JF, Qaseem T, Howell DA, Sherman S.	Effect of endoscopic stenting of malignant bile duct obstruction on quality of life.	FACT - G	234 patients included in the study; 163 completed the questionnaire at baseline, 95 at 30 days and 54 at 180 days	Baseline, 1 and 3 months
Ballinger AB, McHugh M, Catnach SM, Alstead EM, Clark ML.	Symptom relief and quality of life after stenting for malignant bile duct obstruction.	Rotterdam Symptom Checklist, Hospital Anxiety and Depression Scale and 2 more questions regarding jaundice and pruritus	19 patients; 16 finalised the follow-up	Baseline, 1, 4, 8, 12 weeks
Luman W, Cull A, Palmer KR.	Quality of life in patients stented for malignant biliary obstructions.	EORTC QLQ-C30 and 2 more questions regarding jaundice and pruritus	47 patients completed the questionnaire at baseline; 38 patients after 28 days	Baseline, 28 days
Saluja SS, Gulati M, Garg PK, Pal H, Pal S, Sahni P, Chattopadhyay TK.	Endoscopic or percutaneous biliary drainage for gallbladder cancer: a randomized trial and quality of life assessment.	WHO-QOL BREF26 and EORTC QLQ-C30	54 patients	Baseline, 1 and 3 months
Radwan MI, Emara MH, Zaghloul MS,	Double plastic stenting for inoperable	EORTC QLQ-C30	72 patients	1 and 6 months

Zaghloul AMS.	malignant biliary stricture among cirrhotic patients as a possible cost-effective treatment: a pilot study.			
Abraham NS, Barkun JS, Barkun AN	Palliation of malignant biliary obstruction : a prospective trial examining impact on quality of life.	36-Item Short Form (SF-36) Health Survey	50 patients (26 patients at 1 month)	Baseline, 1 month

Results

-Barkay O et al. [8] included in their study patients with suspected MBO, presenting with jaundice, cholangitis or cholestasis and life expectancy over a month. ERCP with endoscopic stent placement was performed. The Functional Assessment of Cancer Therapy – General (FACT - G) questionnaire was used in order to evaluate the impact of endoscopic stenting on QoL. The questionnaire was administered at baseline, at 1 and 3 months after stent placement. 234 patients were included in the study; among those, 164 completed the questionnaire at baseline, 95 at 30 days and 54 at 180 days. Regarding QoL, it has been recorded an overall improvement of 13.8 points from baseline to 30 days and by 13.3 points from baseline to 180 days. Significant improvement of weight loss, appetite, pruritus, fever or abdominal pain was also registered at these patients.

-Radwan MI et al. [9] evaluated 72 cirrhotic patients' QoL at baseline and at 6 months after double plastic stenting, using European Organisation of Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ-C30), revealing an increased score for both functional scale and global health status. There have also been recorded decreased scores of the symptomatology items implying an improvement of symptoms such as nausea and vomiting, abdominal pain and anorexia.

-Luman W et al. [10] assessed QoL of 47 patients using EORTC QLQ-C30 questionnaire, which was supplemented with 2 questions regarding cholestatic symptoms in order to evaluate the effect of endoscopic stenting on symptoms other than jaundice or pruritus. The questionnaire was completed at presentation, within 48 hours of stenting (47 patients) and 28 days later, after endoscopic stenting (38 patients). Improvement of liver function tests has been recorded as a result of stent placement in the cases of the 38 patients who finalized the follow-up. The impact on patients' QoL was demonstrated by the improvement of the emotional and cognitive functions, as well as symptomatology including jaundice, pruritus, anorexia, diarrhoea or trouble sleeping.

-QoL questionnaire was also completed by the patients included in the study conducted by Balingier et al. [11] at baseline and 1 (19 patients), 4, 8, 12 (16 patients) weeks later after the endoscopic stenting was performed. Results of the

study confirmed the utility of endoscopic stent placement with successful biliary decompression by the improvement of overall QoL, pruritus and jaundice, as well as general cancer-related symptoms.

-Patients with gallbladder carcinoma, not suitable for curative resection, presenting one or more of the criteria: (1) jaundice, with a level of serum bilirubin over 10 mg/dL; (2) pruritus; (3) cholangitis, were included in the study of Saluja SS et al. [12]. The effect of both endoscopic stenting and percutaneous transhepatic biliary drainage was assessed using The World Health Organization (WHO)-QOL BREF26 and EORTC QLQ-C30 scores, before stenting and 1 and 3 months after. No major difference was recorded in the QoL parameter in the first month after the procedure was performed. Nevertheless, cognitive, physical and emotional scores, as well as overall health condition were significantly improved at 3 months of follow-up.

-Abraham NS et al. [13] enrolled in their study 50 patients (20 men, 30 women) with unresectable MBO, without liver metastasis, who were suitable for endoscopic biliary decompression. At presentation, 70% of patients accused pruritus, while 98% jaundice. QoL was quantified using SF-36 Health Survey questionnaire at baseline and 1 month after stent placement. Endoscopic stenting was responsible for a 33% decrease of bilirubin level, as well as an important improvement of social and mental functions.

Discussion

Carcinoma of the bile duct, ampulla of Vater, gallbladder and pancreas, as well as metastatic diseases are responsible for MBO, which may arise at any level of the biliary tree. The malignancy causing biliary obstruction is frequently diagnosed at an advanced stage, so most of the patients are inoperable at the time of the diagnosis. In such cases, biliary stent therapy is gaining ground as a more comfortable and less invasive alternative to surgery, the main focus being improving patients' well-being, rather than prolonging their lives. Endoscopic-guided stent placement represents the treatment of choice in the cases of unresectable MBO in order to relieve symptoms as jaundice or pruritus and improve patients' QoL. There are two main types of stents that could be used for the decompression of biliary obstruction. Firstly, there are PS which are commonly used for their safety, efficiency and low-price. Unfortunately, periodic stent replacement is needed so as to assure stent patency. Secondly, there are SEMs which are high-priced and offer prolonged patency compared to PS, thus being recommended for patients with life expectancy greater than 3-6 months. Once stent placement is performed, the decompression of biliary obstruction, followed by successful biliary drainage, is responsible for the improvement of symptoms such as jaundice, pruritus or weight loss, improvement that impact patients' QoL, as well. Assessing the QoL of oncologic patients is important as it helps not only physicians to measure the quality of their technique, but also the patient's status in terms of palliative care.

Conclusion

MBO is frequently the consequence of an unresectable disease. Therefore, palliative management using biliary stents has become the standard treatment for the decompression of biliary stricture. As curative treatment does not represent an option for such cases, the main focus is improving patients' symptoms including jaundice, pruritus, anorexia and overall QoL, rather than prolonging their lives. The advances in

endoscopic techniques, as well as the development of stents available nowadays, place endoscopic stenting in the first position in the management of MBO. In order to quantify the benefits in QoL achievable by endoscopic stenting, more evidence is needed to support its utility due to the lack of studies assessing the impact of biliary stent placement on QoL. According to Barkay et al. [8], successful biliary drainage is associated with significant improvement of weight loss, appetite, pruritus, fever or abdominal pain, items quantified using FACT-G questionnaire. QoL was also measured by Ballinger et al. [11] using a 3-part questionnaire including Rotterdam Symptom Checklist, Hospital Anxiety and Depression Scale and 2 more questions regarding jaundice and pruritus. The assessment revealed improvement of symptoms such as anorexia, indigestion and weight loss, as well as overall QoL. The impact of endoscopic stenting on patients' QoL was demonstrated in the study of Luman et al. [10] by the improvement of the emotional and cognitive functions, as well as symptomatology including jaundice, pruritus, anorexia, diarrhoea or trouble sleeping. Abraham et al. [13] used the SF-36 Health Survey to demonstrate significant improvements in both social function and mental health at 1 month after stent placement. Despite the limited studies available by now, the utility of stent placement in the palliative management of diseases causing MBO is confirmed by the resolution of pruritus and jaundice, usually at a short time after endoscopic stenting, followed by the improvement of overall QoL and general symptomatology cancer-related, such as anorexia, appetite, weight loss.

Take home messages:

- MBO can occur at any level of the biliary ducts.
- It is frequently the consequence of an un-resectable disease.
- Palliative endoscopic stenting is the treatment of choice in these cases.
- There are two types of biliary stents: plastic stents and self-expanding metallic stents.
- Stent choice depends on the prognosis and location of obstruction.
- Decompression of MBO may be justified by the improvement of QoL.

Study limitations:

- A limited number of previous studies regarding the impact of endoscopic stenting of MBO on patients' QoL.
- The lack of a validated questionnaire to assess QoL specific for patients presenting MBO.
- A significant proportion of patients did not succeed to finalise the follow-up.
- Some of the patients who completed the questionnaires may have received treatments such as chemotherapy and/or radiotherapy throughout the follow-up, so the improvement of QoL could also be attributed to that type of therapy.

Conflict of interest

There is no conflict of interest that needs to be declared.

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