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Original Article

ESOPHAGEAL STRICTURES AFTER USE OF NASOGASTRIC TUBE - A REFLECTION ON THE INDISCRIMINATE USE

Estenose esofágica por uso de sonda nasogástrica - reflexão sobre o uso indiscriminado

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ABSTRACT – ***Background*** - The nasogastric tube is often used by clinicians and surgeons for various purposes. However, complications are described with its use, and more severe esophageal stenosis with high morbidity rates, have effective prevention and treatment. ***Aim*** - To analyze the clinical, epidemiology, treatment and outcomes of patients with this complication. ***Methods*** - Retrospective analysis of 26 patients who had complete records of age, gender, etiology and duration of gastric nasogastric tube, co-morbidities and previous surgery as well as the treatment evolution, early and late, and classified according to the scale of Karnofsky after mean follow-up of 28 months. ***Results*** - The majority were men (76.9%), mean age 47 years and mean duration of nasogastric tube of 19 days; 69.2% were surgical patients and only 26.9% had gastro-esophageal reflux disease. All were treated with esophageal dilatation aided by endoscopy and 61.5% underwent surgical treatment. The early results were excellent in 46.2%, good in 34.6% and 19.2% regular. Late results were excellent in 42.4%, good in 30.7% and 26.9% regular. ***Conclusions*** - The use of nasogastric tube should be restricted to selected cases, preventing the occurrence of esophageal stricture; when present, it can be effectively treated using esophageal dilation, with or without associated operation.

HEADINGS - Esophageal stenosis. Nasogastric tube. Esophagus. Dilations.

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RESUMO – ***Racional*** - A sonda nasogástrica é frequentemente empregada por clínicos e cirurgiões para diversos fins. No entanto, são descritas complicações de seu uso, sendo a estenose esofágica a mais grave, com grande morbidade, passível de prevenção e tratamento eficazes. ***Objetivo*** - Analisar o perfil clínico-epidemiológico, o tratamento e seus resultados, nos pacientes com esta complicação. ***Métodos*** - Análise retrospectiva de 26 pacientes que apresentavam registros completos de idade, sexo, etiologia e duração da sondagem gástrica, co-morbidades e operações prévias, bem como do tratamento empregado e evolução, precoce e tardia, e classificados de acordo com a escala de resultados de Karnofsky, após seguimento médio de 28 meses. ***Resultados*** - A maioria eram homens (76,9%), com idade média de 47 anos e tempo médio de sondagem nasogástrica de 19 dias, sendo que 69,2% eram pacientes cirúrgicos e apenas 26,9% apresentavam doença do refluxo gastroesofágico. Todos foram tratados com dilatações esofágicas auxiliado por endoscopia digestiva e 61,5% foram submetidos a tratamento cirúrgico. Os resultados precoces foram excelentes em 46,2%, bons em 34,6% e regulares em 19,2%. Os resultados tardios foram excelentes em 42,4%, bons em 30,7% e regulares em 26,9%. ***Conclusões*** - O uso da sonda nasogástrica deve ser criterioso e restrito a casos selecionados, o que previne a ocorrência de estenose esofágica, que, quando presente, pode ser tratada de maneira eficaz através de dilatações do esôfago, com ou sem operação associada, a depender de cada caso.

DESCRITORES - Estenose esofágica. Sonda nasogástrica. Esôfago. Dilatações.

INTRODUCTION

Nasograstic intubation (NGI) is a method commonly used by clinicians and surgeons for administering food, preventing and treating gastric distension in patients with gastro-intestinal obstruction or paralytic ileus, during the postoperative period for abdominal surgeries, or other organic pathological conditions[4,7,29]. Its use is not innocuous and is related to some complications, such as nasal and oro-pharyngeal lesions, bronchial infection and esophageal stenosis[4,16], with great morbidity. However, it is possible to be effectively prevented and treated[2].

The mechanism involved is multifactorial. The nasogastric probe interferes with the physiological barrier against gastroesophageal reflux, while keeping open the lower esophageal sphincter and aligning the esophageal-gastric junction[4,5,7,8]. Pre-existing predisposing factors also contribute, such as hiatal hernia or gastroesophageal reflux disease[4,16,21]. Another point to consider is that these patients usually remain lying in bed, thus facilitating the return of stomach contents into the esophagus[1].

But the small proportions of patients with NGI who develop this complication make such mechanisms controversial.

The objective of this study is to analyze the clinical and epidemiological profile of patients with this complication, as well as the results of the treatment.

METHODS

From 1979 to 2011, 44 patients diagnosed with esophageal stenosis secondary to the use of nasogastric intubation were admitted and treated at the Digestive Diseases Surgical Unit and Gastrocentro of the Unicamp University Hospital. Their medical records were reviewed retrospectively, and 26 of them were selected due to complete medical information. Was considered age, gender, etiology and duration of use of the tube, co-morbidities and previous surgeries, as well as the treatment and its results, which were divided into early - within 30 days of treatment -, and late - after this period. They were classified according to Karnofsky's[13] scale of results (Figure 1) into: excellent (90 to 100 points), good (80-90 points), fair (60-80 points) and poor (below 60 points). The variables mentioned above were then placed in a spreadsheet and analyzed.

RESULTS

The follow-up time after treatment ranged from six to 108 months, with an average of 28 months. It predominated in men (76.9%) and the average age was 47 years (14-71). The length of stay of the nasogastric tube ranged from six to 90 days, with an average of 19 days of intubation. Four patients (15.4%) developed stenosis by the use of the tube for less than seven days. Of these, only one previously had gastroesophageal reflux disease, which was also reported in other six patients (26.9%). Other three (11.5%) had hiatal hernia, prior to use of the tube, with no clinical symptoms. Eighteen patients were in the postoperative period of major abdominal surgery (69.2%) and the other eight cases were in clinical treatments (30.8%).

Points	Meaning
91 to 100	No complaints or evidence of disease.
81 to 90	Normal daily activity. Minor symptoms.
71 to 80	Exertion to maintain normal daily activity.
61 to 70	Unable to maintain normal daily activity. Take care of themselves.
51 to 60	Occasionally requires aid for some needs.
41 to 50	Frequently requires aid for most activities.
31 to 40	Special home care required.
21 to 30	Special hospital care required.
11 to 20	Intensive hospital care required.
Up to 10	Imminent death.

FIGURE 1 – Karnofsky's scale of results[13]

All patients were treated with the program of periodical endoscopic esophageal dilations, with Savary-Gilliard tubes. Sixteen patients (61.5%) received additional surgical treatment, as follows: eight fundoplications (five Nissen, two Lind and one Thal-Lind Hatafuku - 30.8%), three gastric resections (11.5%), three patients with prior Billroth II gastrectomy, converted to Roux-en-Y (11.5%) and two gastrostomies - 7.7% (Table 1).

As for the early results, within 30 days after the treatment, 46.2% had excellent results (12 patients), 34.6% good (nine patients) and 19.2% fair (five patients).

Late results were excellent in 42.4% (11 patients), good in 30.7% (eight patients) and fair in 26.9% (seven patients).

No patient had poor results, whether early or late (Table 2).

DISCUSSION

Benign esophagus stenosis is generally associated to secondary chronic esophagitis, mainly to gastroesophageal reflux disease, with or without hiatal hernia[3,4,16,20,26]. However, several authors reported since the beginning of last century, cases of esophageal stenosis caused by prolonged use of NGI in clinical and surgical patients[6,11,12,21].

Douglas[11] (1956) and Graham et al.[12] (1959) described the use of NGI causing esophagitis and esophageal stenosis with significant morbidity associated. The NGI holds the lower open esophageal sphincter aligned the gastroesophageal junction, predisposing to reflux. In addition, the prolonged stay in the supine position, confined

TABLE 1 – Clinical and epidemiological profile of patients and treatment employed

Case	Age (Years)	Time of use (days)	Indication of NGI	Treatment
1	29	14	Acute porphyria	Dilations/Lind Surgery
2	42	15	Intestinal fistula	Dilations
3	42	12	Pyloric stenosis	Dilations/Partial gastrectomy
4	16	10	Traumatic brain injury	Dilations/ Nissen Surgery
5	68	8	PO enterectomy	Dilations/ Thal-Hatafuku Surgery
6	60	8	PO aortic surgery	Dilations
7	70	12	Pyloric stenosis	Dilations/Y-de-Roux
8	70	15	Exogenous intoxication	Dilations/ Nissen Surgery
9	14	14	Encephalitis	Dilations/ Nissen Surgery
10	68	16	Duodenal stenosis	Dilations/Partial gastrectomy
11	64	10	Pyloric stenosis	Dilations/Y-de-Roux
12	23	30	Complicated delivery	Dilations
13	62	8	Duodenal stenosis	Dilations/ Lind Surgery/Y-de-Roux
14	56	4	PO colectomy	Dilations
15	61	3	PO tracheoplasty	Dilations
16	59	74	PO duodenopancreatectomy	Dilations
17	38	17	Intestinal perforation	Dilations
18	64	30	PO colectomy	Dilations
19	33	2	Epilepsy	Dilations/Gastrostomy
20	34	90	Stroke	Dilations/ Nissen Surgery
21	52	30	PO gastric ulcer	Dilations
22	48	12	PO gastric ulcer	Dilations/Partial gastrectomy
23	26	3	Severe acute appendicitis	Dilations
24	22	30	PO laparatomy	Dilations
25	31	23	Traumatic brain injury	Dilations/ Nissen Surgery
26	71	14	PO gastric ulcer	Dilations/Gastrostomy

NGI: Gastric intubation, PO: Postoperative

TABLE 2 – Early (within 30 days after treatment) and late results according to Karnofisky's scale[13]

Case	Early results	Late results
1	Excellent	Excellent
2	Fair	Fair
3	Good	Good
4	Excellent	Excellent
5	Fair	Fair
6	Fair	Fair
7	Excellent	Excellent
8	Excellent	Excellent
9	Excellent	Excellent
10	Excellent	Excellent
11	Excellent	Good
12	Excellent	Good
13	Excellent	Excellent
14	Excellent	Excellent
15	Good	Good
16	Good	Excellent
17	Good	Fair
18	Good	Good
19	Excellent	Excellent
20	Excellent	Excellent
21	Good	Fair
22	Good	Fair
23	Fair	Good
24	Good	Fair
25	Good	Good
26	Fair	Good

to bed, would also facilitate the return of stomach contents into the esophagus[1,9]. It should be noted the occurrence of other complications such as nasal and oropharyngeal lacerations, and increased risk of pulmonary complications, also related to the reflux[16]. However, there are few reports in the literature of patients with esophageal stricture after the use of NGI[1].

Rider et al.[25], in 1962, observed that the best management of esophageal stenosis was the prevention, reserving the gastric intubation only for cases in which it is strictly necessary. Reasbeck et al.[23], in 1984, discouraged the routine use of NGI after exploratory laparotomy due to the associated discomfort and the high morbidity potential. Other authors dedicated their efforts to control gastroesophageal reflux associated with the presence of the NGI. Lahiri[15], in 1987, described a catheter with a balloon, apparently effective for this purpose, however without acceptance in the medical practice.

In these cases, there was predominance in men, according to literature[1]. Were observed cases with NGI for less than seven days, thus demystifying the need for long periods of NGI for the occurrence of stenosis. Only 26.9% of patients had comorbidities that besides the NGI could contribute to esophageal stenosis.

The treatment is based in esophageal dilations with aid of digestive endoscopy[3,10,14,22]. Was used Savary-Gilliard dilators, and surgical treatment was indicated for 61.5% of cases with satisfactory results, early and late. The surgery employed did not altered the results, and the individualized indication was made for each case, depending on the stenosis level, previous surgeries and patient conditions. In refractory or recurrent cases, an option recommended by some authors is the use of self-expanding stents[17,18,24].

Pinotti et al.[21] reported 12 cases of this serious complication of esophageal lesions, from which eight were probed in the postoperative stage of different types of abdominal interventions and four due to clinical diseases. Of this total, seven patients underwent antireflux surgery followed by esophageal dilations. Andreollo et al.[1], in 1987, described simple and rational measures that can prevent or minimize the esophageal mucosal injury and subsequently prevent stenosis of esophagus related to NGI. They are: a) cautious use of NGI and for the shortest time possible, if really necessary; b) if there is the need for dietary support by NGI, prioritize smaller diameter tubes, such as Dubbhoff type tubes and if such a need is already planned in advance - in patients undergoing major abdominal surgery -, consider making a gastrostomy or jejunostomy; c) attach the tube correctly; d) avoid prolonged decubitus and keep head elevated, if

possible; e) use of gastric protectors such as proton pump inhibitors or H2 receptor blockers should be considered.

In recent years some authors have questioned the use of NGI after abdominal surgery, and recent metanalysis involving a significant number of patients and randomized publications, concluded that it does not reduce the risk of ileum or aspiration, as well as it does not have relevant clinical benefits. In addition, the group of patients that did not use NGI, had an earlier return of the intestinal function and lower index of pulmonary complications. However, in surgical procedures in the upper abdomen with higher gastric dilation risk or prolonged ileum (esophagectomies, gastroduodenopancreatectomies, ileal pouchs) still persists its indication for the shortest time possible, observing the cares described above[19,27,28].

CONCLUSION

The use of NGI should be cautious and restricted to selected cases, in order to prevent the occurrence of esophageal stenosis, which can be efficiently treated through dilations of the esophagus with or without associated surgery.

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