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SCIENTIFIC LETTER

Perioperative nutritional management of the patient undergoing cephalic duodenopancreatectomy: A multicenter retrospective observational study in the Community of Madrid

Manejo nutricional perioperatorio del paciente sometido a duodenopancreatectomía cefálica: estudio observacional retrospectivo multicéntrico en la Comunidad de Madrid

Cephalic duodenopancreatectomy (CDP) is the surgical technique of choice for the treatment of both malignant and benign lesions of the head of the pancreas, duodenum and extrahepatic bile duct. Despite technical advances, CDP is associated with high morbidity and mortality, which has also been related to the presence of pre-operative malnutrition. It has been reported that patients with malnutrition (odds ratio 3.033; 95% CI 1.360–6.761) or at risk of malnutrition (odds ratio 2.521; 95% CI 1.253–5.074) present a significantly higher risk of complications after CDP than well-nourished patients.[1] This relationship is particularly relevant in older patients,[2] and it has been documented that the morbidity rate after CDP in malnourished patients over 65 years of age is significantly higher than in well-nourished patients (50% vs. 20%; p = 0.024).[3]

Despite this influence of nutritional status and nutritional support in the CDP post-operative period, few real-life studies focus on this aspect. Therefore, the primary objective of this retrospective observational study, conducted in seven hospitals in the Community of Madrid (Hospital 12 de Octubre, Hospital Ramón y Cajal, Hospital Fundación Jiménez Díaz, Hospital Infanta Sofía, Hospital Príncipe de Asturias, Hospital Severo Ochoa and Hospital de Fuenlabrada), was to report on the nutritional support to a cohort of patients who underwent CDP. Similarly, reporting on patients' nutritional status and post-operative complications, as well as assessing the differences in terms of complications according to age (≤70 vs. >70 years), were established as secondary objectives.

To characterise the patients, their sociodemographic data and nutritional status were recorded prior to the surgical procedure: body mass index, weight loss percentage in the three (3) months leading up to the surgical procedure, pre-admission nutritional assessment and nutritional diagnosis during hospitalisation. Also, the type of pre- and post-operative nutritional support was recorded to assess nutritional management, and mortality (in-hospital and 30 days after discharge) and peri-operative complications, including further surgical procedures, were recorded as part of assessing the post-operative outcome of the patients.

Finally, chi-squared and Fisher's tests (variables with frequency <5%) were used to evaluate differences according to age (≤70 vs. >70 years). p values <0.05 were considered statistically significant. The analysis was performed using the SPSS® v.15 statistical package.

A total of 106 adult patients (51.9% men) were included, with a mean age (±SD) of 65.0 ± 10.7 years, who had undergone a CDP for any cause between June 2012 and June 2014. 45.3% of the patients had a weight loss of more than 5% in the three months prior to the CDP (mean weight loss percentage 5.9% ± 6.3% kg). 45% and 88% of the patients underwent pre- and post-admission nutritional assessment, respectively, mostly by means of a subjective global assessment. This assessment showed that 63.4% had some type of malnutrition. Before the CDP, 28.8% of the patients received nutritional support, the majority (91.3%) with oral supplements, with an immunomodulatory formula being the most commonly used one. After the CDP, almost all the patients received nutritional support (93.3%) through parenteral nutrition (75.5%). The mean time on parenteral nutrition was 13.7 days.

The mortality rate was 5.9% during hospitalisation and 3% during the first 30 days after discharge. A total of 55.7% of the patients presented some type of complication after the CDP; the most common one was delayed gastric emptying (26.8%), followed by abscess (21.2%). In addition, 19.8% required further surgery. Patients over 70 years of age presented with pre-operative malnutrition more frequently than younger patients (71.8% vs 58.5%; p = 0.137), required a longer hospital stay (34.4 ± 21.7 vs. 26.4 ± 25.6 days), further surgeries (25.6% vs. 16.1%; p = 0.181), and had significantly higher in-hospital mortality (12.5 vs. 1.6%; p = 0.033). The details of the results are shown in Table 1.

In our study, conducted between 2012 and 2014, more than 60% of the patients had some type of malnutrition at admission. However, only a small percentage underwent an outpatient nutritional assessment or nutritional prehabilitation prior to CDP. This practice was consistent with the *Enhanced Recovery After Surgery* (ERAS)[4] guidelines for peri-operative care of 2012, which limited pre-operative nutritional support to malnourished patients. In subsequent guidelines, such as those of the European Society of Clinical Nutrition and Metabolism (ESPEN)[5] of 2017 or the ERAS[6] peri-operative care guidelines of 2019, recommendations were introduced to assess pre-operative nutritional status and to

Table 1 Baseline characteristics of patients undergoing CDP, their nutritional management, progression and differences in age groups.

Variable	All patients (n = 106)	According to age group		
		>70 years (n = 39)	≤70 years (n = 67)	p
Baseline characteristics				
Mean age (±SD), years	65.0 (±10.7)	75	58	
Gender, men, n/N (%)	55/106 (51.9)	23/40 (57.5)	32/66 (48.5)	
Pre-operative weight, mean (±SD), kg	69.1 (±13.3)	67.1 (±10.9)	69.9 ± 14.4	–
Body mass index, mean (±SD), kg/m²	25.9 (±4.0)	26.06 (±4.08)	25.6 ± 4.04	–
Patients with weight loss (>5%) in the 3 months prior to the surgical procedure, n/N (%)	48/103 (45.3)	22/40 (55)	26/66 (40)	0.134
Weight loss in the 3 months prior to the surgical procedure, mean (±SD), kg	5.9 (±6.3)	6.7 (±7.3)	5.2 (±5.5)	–
Nutritional assessment of the patient				
Patients with outpatient nutritional assessment, n/N (%)	36/80 (45)	–	–	–
Patients with malnutrition in pre-operative nutritional assessment, n/N (%)	59/93 (63.4)	71.8	58.5	0.137
Patients with preoperative nutritional support, n/N (%)	23/80 (28.8)	–	–	–
Type of pre-operative nutritional support, n/N (%)		–	–	–
Parenteral nutrition	2/23 (8.7)	–	–	–
Standard oral nutrition	7/23 (30.4)	–	–	–
Immunomodulatory oral nutrition	13/23 (56.5)	–	–	–
Oral nutrition for diabetes	1/23 (4.4)	–	–	–
Patients with post-operative nutritional support, n/N (%)	98/105 (93.3)	–	–	–
Patients who received post-operative parenteral nutrition, n/N (%)	80/106 (75.5)	–	–	–
Type of post-operative enteral nutrition tube, n/N (%)				
Nasojejunal	25/36 (69.4)	–	–	–
Jejunostomy	11/36 (30.6)	–	–	–
Post-operative clinical course				
Days of hospitalisation, mean (±SD)	29.3 (±24.4)	34.1 (±21.7)	26.4 (±25.6)	–
Patients who died during their hospital stay, n/N (%)	6/102 (5.9)	5/40 (12.5)	1/62 (1.6)	0.033
Patients who died within 30 days after discharge, n/N (%)	3/101 (3.0)	2/38 (5.3)	1/63 (1.6)	0.316
Patients with postoperative complications, n/N (%)	59/106 (55.7)	5/10 (50)	14/21 (66.7)	0.308
Types of postoperative complications, n/N (%)				
Delayed gastric emptying	26/97 (26.8)	11/38 (28.9)	16/60 (26.7)	0.806
Abscess	21/99 (21.2)	7/39 (17.9)	14/61 (23)	0.549
Pancreatic fistula	12/96 (12.5)	4/39 (10.3)	8/58 (13.8)	0.604
Biliary fistula	10/97 (10.3)	4/39 (10.3)	6/59 (10.3)	0.989
Gastrointestinal bleeding	9/99 (9.1)	4/39 (10.3)	5/61 (8.2)	0.726
Wound infection	8/96 (8.3)	3/39 (7.7)	5/58 (8.6)	0.871
Haemoperitoneum	8/102 (7.8)	2/39 (5.1)	6/64 (9.4)	0.435
Patients with reintervention, n/N (%)	20/101 (19.8)	10/39 (25.6)	10/62 (16.1)	0.181

SD, standard deviation.

provide nutritional support and physical rehabilitation to patients who were scheduled for major surgery.

Regarding post-operative treatment, and despite the clinical guideline recommendations (ERAS of 2012[4] and ESPEN of 2009[7]), in our study patients received post-operative nutritional support with parenteral nutrition, since enteral access was not available in most cases. In this regard, subsequent evidence supports the use of enteral nutrition over parenteral nutrition due to the reduction in complications and hospital stay associated with enteral nutrition.[8]

However, in our sample of patients, we did not identify these differences between the two (2) types of nutritional support.[9] In the group of patients over 70 years of age, we observed a higher prevalence of malnutrition together with greater peri-operative morbidity and mortality. These results are in line with the findings of other series.[2,10]

The main limitations of this study are those inherent to its non-randomised observational design and small sample of patients.

In summary, in our study, prior to the publication of the ERAS guidelines, nutritional support in patients undergoing

CDP was mainly post-operative and with parenteral nutrition. Post-operative complications were common and mainly affected those over 70 years of age, so this group would benefit the most from prehabilitation programmes.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

References

1. Kim E, Kang JS, Han Y, Kim H, Kwon W, Kim JR, et al. Influence of preoperative nutritional status on clinical outcomes after pancreatoduodenectomy. HPB (Oxford). 2018;20:1051–61, http://dx.doi.org/10.1016/j.hpb.2018.05.004.
2. Utsumi M, Aoki H, Nagahisa S, Une Y, Kimura Y, Watanabem M, et al. Nutritional assessment and surgical outcomes in very elderly patients undergoing pancreaticoduodenectomy: a retrospective study. Surg Today. 2021;51:941–53, http://dx.doi.org/10.1007/s00595-020-02169-2.
3. Kim E, Lee DH, Jang JY. Effects of preoperative malnutrition on postoperative surgical outcomes and quality of life of elderly patients with periampullary neoplasms: a single-center prospective cohort study. Gut Liver. 2019;13:690–7, http://dx.doi.org/10.5009/gnl18469.
4. Lassen K, Coolsen MM, Slim K, Carli F, de Aguilar-Nascimento JE, Schäfer M, et al. Guidelines for perioperative care for pancreaticoduodenectomy: Enhanced Recovery After Surgery (ERAS®) Society recommendations. Clin Nutr. 2012;31:817–30, http://dx.doi.org/10.1016/j.clnu.2012.08.011.
5. Weimann A, Braga M, Carli F, Higashiguchu T, Hübner M, Klek S, et al. ESPEN guideline: Clinical nutrition in surgery. Clin Nutr. 2017;36:623–50, http://dx.doi.org/10.1016/j.clnu.2017.02.013.
6. Melloul E, Lassen K, Roulin D, Grass F, Perinel J, Adham M, et al. Guidelines for perioperative care for pancreatoduodenectomy: Enhanced Recovery After Surgery (ERAS) recommendations 2019. World J Surg. 2020;44:2056–84, http://dx.doi.org/10.1007/s00268-020-05462-w.
7. Braga M, Ljungqvist O, Soeters P, Fearon K, Weimann A, Bozzetti F. ESPEN guidelines on parenteral nutrition: surgery. Clin Nutr. 2009;28(378), http://dx.doi.org/10.1016/j.clnu.2009.04.002.
8. Gianotti L, Besselink MG, Sandini M, Hackert T, Conlon K, Gerritsen A, et al. Nutritional support and therapy in pancreatic surgery: a position paper of the International Study Group on Pancreatic Surgery (ISGPS). Surgery. 2018;164:1035–48, http://dx.doi.org/10.1016/j.surg.2018.05.040.
9. Valero MA, Aragón C, Olmo O, Díaz Guardiola P, Cancer Minchot E, Álvarez Hernández J, et al. Efecto del soporte nutricional sobre la evolución postoperatoria de pacientes sometidos a duodenopancreatectomía cefálica: estudio multicéntrico de la Comunidad de Madrid. XV Congreso de la Sociedad de Endocrinología,Nutrición y Diabetes de la Comunidad de Madrid. Endocrinol Nutr. 2016:1–23.
10. Sukharamwala P, Thoens J, Szuchmacher M, Smith J, DeVito P. Advanced age is a risk factor for post-operative complications and mortality after a pancreaticoduodenectomy: a meta-analysis and systematic review. HPB (Oxford). 2012;14:649–57, http://dx.doi.org/10.1111/j.1477-2574.2012.00506.x.

Carmen Aragón Valera[a,*], Patricia Díaz Guardiola[b], Emilia Cancer Minchot[c], Dolores del Olmo García[d], María de los Ángeles Valero Zanuy[e]

[a] *Departamento de Endocrinología y Nutrición, Hospital Universitario Fundación Jiménez Díaz, Madrid, Spain*
[b] *Departamento de Endocrinología y Nutrición, Hospital Universitario Infanta Sofía, San Sebastián de los Reyes, Madrid, Spain*
[c] *Departamento de Endocrinología y Nutrición, Hospital Universitario de Fuenlabrada, Fuenlabrada, Madrid, Spain*
[d] *Departamento de Endocrinología y Nutrición, Hospital Universitario Severo Ochoa, Leganés, Madrid, Spain*
[e] *Departamento de Endocrinología y Nutrición, Hospital Universitario 12 de Octubre, Madrid, Spain*

* Corresponding author.
E-mail address: carmen.arval@gmail.com
(C. Aragón Valera).

Transient thymic hyperplasia associated with thyroiditis

Hiperplasia tímica transitoria asociada a tiroiditis

Thymic hyperplasia is characterised by a generally diffuse and symmetrical increase in the size of the thymus, which may be caused by epithelial cell proliferation or increased lymphoid follicles in this organ. It may be an incidental finding or alternatively manifest compressive or systemic symptoms. Its association with several autoimmune diseases, including myasthenia gravis, systemic lupus erythematosus, rheumatoid arthritis and, above all, Graves' disease, has been reported.[1] We present a case of transient thymic hyperplasia, incidentally found, associated with silent or painless thyroiditis.

This was a 51-year-old female patient, a one pack-a-day smoker, with no other relevant medical or surgical history, who was examined by the Pulmonology department due to a one-year history of asthma-like symptoms, with night-time coughing and wheezing fits, exertional dyspnoea and recurrent bronchitis. During the medical interview, she reported symptoms of nervousness, irritability and 5-kg weight loss in two months without a reduction in dietary intake. The patient's blood test results revealed hyperthyroidism with thyrotropin or thyroid-stimulating hormone (TSH) below 0.01 uIU/mL (normal range 0.38–5.33) and free thyroxine (T4) 2.49 ng/dl (0.38–1.5), while she was posi-