

Palliative treatment for esophageal and cardia cancer

Tratamiento paliativo en el cáncer de esófago y cardias

Juan Carlos Barrera Ortega,* Orestes Noel Mederos Curbelo,**
Juan Antonio Castellanos González,* Carlos Alberto Romero Díaz,*
Pablo Cruz González,*** Genaro Cruz Caloca****

Key words:

Palliative surgery,
esophageal cancer,
prosthesis, bypass.

Palabras clave:

Cirugía paliativa,
cáncer de esófago,
prótesis, derivaciones.

ABSTRACT

Introduction: More than 75% of the procedures performed in esophageal cancer are palliative measures; there is an ethical dilemma on how to solve the fundamental problem, which is the feeding and nutrition of the patient. Due to the fact of non-availability of esophageal prosthesis, as an alternative means we construct prosthesis with the use of other materials. **Objective:** To demonstrate the experience in the attention of patients with advanced esophageal and cardia cancer at the "Manuel Fajardo" University Hospital. **Methods:** We present 127 patients with advanced esophageal and cardia cancer, all of whom received palliative treatment during the period from 1995 to 2016 at the "Manuel Fajardo" University Hospital, therefore constituting the universe of the study. **Results:** In 53.54% of the cases, the tumors were predominantly localized in the third inferior portion of the esophagus and the cardias, followed by the middle third and upper third portions. Esophageal prosthesis were used in 115 patients; four were industrial self-expanding metallic prosthesis and the rest were rigid plastic ones, of which three were industrial (Heering) and 108 were handmade. Nine bypasses were carried out, as well as seven retrosternal tubular esophagogastroplasties, two esophagogastrostomies and three abdominal ostomies. Absolute alcohol was used in 20 patients before placing the prosthesis. Twelve patients had complications with the placing of the esophageal prosthesis (9.44%), with a smaller percentage among the handmade ones (8.33%); neither aspirative pneumonia nor surgical mortality occurred. Oral feeding was achieved in 97.64 % of the patients, and we observed greater life expectancy in those with bypass with isoperistaltic tubular esophagogastroplasty. **Conclusions:** In patients with unresectable or non-operative tumor of the esophagus and cardias, we should offer the best quality of life with a palliative treatment that excludes abdominal stomas. The construction of Teflon prosthesis, the use of absolute alcohol and bypasses are options of palliative treatment that provide an ethical solution to the conflict of these patients, with significant savings when crafting handmade prosthesis.

RESUMEN

Introducción: En el cáncer de esófago, más de 75% de los procedimientos a realizar son medidas paliativas, por lo que se establece un dilema ético en la forma de solucionar el problema fundamental: la vía de alimentación. **Objetivo:** Revisar la experiencia del Hospital Universitario "Comandante Manuel Fajardo" en el tratamiento paliativo de los enfermos con cáncer de esófago avanzado. **Métodos:** Se estudiaron 127 enfermos con cáncer de esófago y cardias avanzado a los que se les realizó tratamiento paliativo, atendidos desde 1995 hasta 2016. Estos constituyeron todo el universo y la muestra del estudio. **Resultados:** La localización del tumor predominó en el tercio inferior del esófago y cardias (53.54 %), seguido por el tercio medio y superior. Las prótesis esofágicas fueron utilizadas en 115 enfermos, cuatro industriales metálicas autoexpansibles y el resto plásticas rígidas (tres industriales tipo Heering y 108 construidas de forma artesanal). Se realizaron nueve derivaciones, siete esofagogastroplastias tubulares retroesternales, dos esofagogastrostomías y, en tres pacientes, ostomías abdominales. El alcohol absoluto fue utilizado en 20 enfermos como paso previo para poner la prótesis. Se presentaron 12 complicaciones con las prótesis esofágicas (9.44%), con menor porcentaje en las artesanales (8.33%). No se registraron neumonías aspirativas ni mortalidad quirúrgica; se logró la alimentación oral en 97.64% de los enfermos, con mayor supervivencia en las derivaciones con esofagogastroplastia tubular isoperistáltica. **Conclusiones:** En pacientes con tumores no resecables de esófago y cardias, debe tratarse de ofertar la mejor calidad de vida con un tratamiento paliativo que elimine las ostomías abdominales; por tanto, las prótesis, el alcohol absoluto y las derivaciones son opciones de tratamiento paliativo que ofrecen una solución ética al conflicto de estos enfermos, con un ahorro económico significativo con el uso de prótesis artesanales.

* Surgery specialist.

Assistant professor.

** Surgery specialist.

Professor.

*** Oncology specialist.

Assistant professor.

**** Resident in general surgery.

Hospital Universitario
«Comandante Manuel
Fajardo». Havana,
Cuba.

Received: 18/06/2017

Accepted: 25/01/2018

INTRODUCTION

Esophageal and cardia cancer are serious diseases, with a dire prognosis; the main problem is overcoming dysphagia.¹⁻⁷ Seventy five percent of resections are actually palliative, due to a commonly late diagnosis. Even in a high percentage of patients, it is impossible to perform surgical resection, with a 25% to 30% mortality after excision surgery. Restoring digestive transit leads to an ethical dilemma that involves not only providing an adequate nutritional supply, but how to administer it. Various procedures have been used for non-resectable tumors, such as esophageal dilations, stents, laser, radiotherapy, abdominal stomas, and bypasses.⁸⁻⁹ At the historical moment when we started this study, our country was suffering economic shortages and we had no laser for tumor tunneling. Commercial esophageal stents became scarce, and we were reluctant to follow the easy path of gastrostomy. The latter was only used temporarily, since it made feeding the patient possible (serving the principle of beneficence, i.e., promoting the patient's wellbeing), but it does not fully comply with non-maleficence (i.e., preventing and not harming the patient).¹⁰ Consequently, we decided to restore digestive transit by manufacturing handmade Teflon stents, using absolute alcohol infiltration in cases of complete esophageal obliteration, creating bypasses, as well as providing comprehensive nutritional support through our nutritional support group (known as GAN) (2006).^{1,2,10} This paper reviews the experience in the palliative treatment of patients with advanced esophageal cancer at *Hospital Universitario "Comandante Manuel Fajardo"*.

METHODS

We conducted an observational, analytical, prospective, cross-sectional, case-series study in patients with non-resectable esophageal and cardia cancer, between 1995 and 2016. The study universe and population included 127 patients. Staging was based on the International Union against Cancer

guidelines. Initial assessment included a clinical history and physical examination, chest X-ray, chest and upper abdomen CT scan, and endoscopy with biopsy.

Inclusion criteria were: the clinical diagnosis, X-ray and endoscopic findings of esophageal cancer, histologically confirmed, and classified as non-resectable. Since the beginning of the study, a working algorithm was developed as the basis for performing the various procedures. Two methods were used for stent placement: endoscopically pushing self-expanding stents, and traction for both commercial and handmade plastic stents. The latter were manufactured by our group using 9- and 10-size gauge endotracheal tubes. A nasogastric tube was attached to the stent, pulling the distal end located within the stomach until the stent was in place within the tumor. In case the nasogastric tube could not be pulled through, tumor alcoholization was performed so as to cause tumor necrosis and place the stent. X-ray control was done within 24 hours of stent placement. Oral feeding was initiated 24 hours after the procedure, and an esophagogram with diluted barium was performed 10 days later. Bypasses were retrosternal isoperistaltic tubular esophagogastroplasty and esophagogastrorrhaphy. The abdominal stomas used were gastrostomy and jejunostomy. GAN provided nutritional support starting in 2006. All patients signed an informed consent form. The Kaplan-Meier method was used for survival analysis.

RESULTS

Tumors were predominantly located in the lower third of the esophagus and the cardia (68 patients; 53.54%), followed by the middle third (53 patients) and the upper third (6 patients). In 80 patients, the histological diagnosis was squamous-cell carcinoma, 45 were adenocarcinomas, and 2 had undifferentiated tumors. In two patients, lung tumors had invaded the esophagus. Most patients were male (9:1), with an age range between 46 and 78 years, and a mean of 63 years. The main risk factors were alcohol drinking and smoking. Esophageal stents

were used in 115 patients: 4 were metallic self-expanding stents, and the rest were rigid plastic stents (3 Heering-type commercial stents, and the remaining 108, handmade stents) (*Figures 1A and B*).

Absolute alcohol infiltration to cause necrosis in the tumor lumen was performed in 20 patients with complete esophageal obstruction that prevented introducing the nasogastric tube for stent placement by traction. Introducing the nasogastric tube was possible after a single alcoholization session in 7 patients; two sessions were needed in twelve patients, and three sessions in one patient. Before inserting the nasogastric tube,



Figure 1. Contrast esophagogram two weeks after placement of a handmade plastic stent for an extensive tumor in the middle third (A). Models of stents (B).

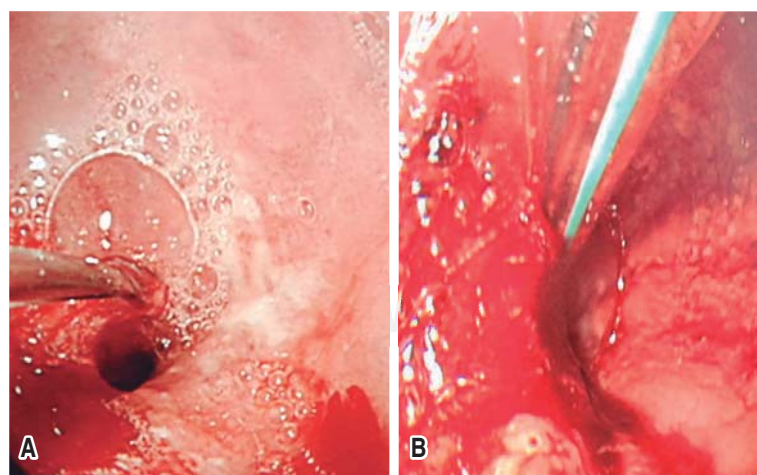


Figure 2. After infiltration with absolute alcohol and inserting a guidewire (A), a nasogastric tube is placed under endoscopic view (B).

a guidewire was inserted into the stomach (*Figures 2A, B and Table I*).

Nine bypasses were performed, i.e., seven retrosternal isoperistaltic tubular esophagogastroplasties at the expense of the greater curvature of the stomach (*Figure 3, A and B*) and two esophagogastrostomies (Clagett type). Three patients were discharged with permanent abdominal stomas for feeding.

Table I. Patient distribution by palliative procedure (1995-2016).

Palliative procedure	Total
Stents	115
Trans-tumoral stent (2, lung cancer)	95
Absolute alcohol and stent	18
Absolute alcohol, radiotherapy and stent	2
Surgical bypasses	9
Rutkowski-Postlethwait	7
Clagett	2
Abdominal stoma	3
Gastrostomy	1
Jejunostomy	2
Total	127

Source: patient records in file.

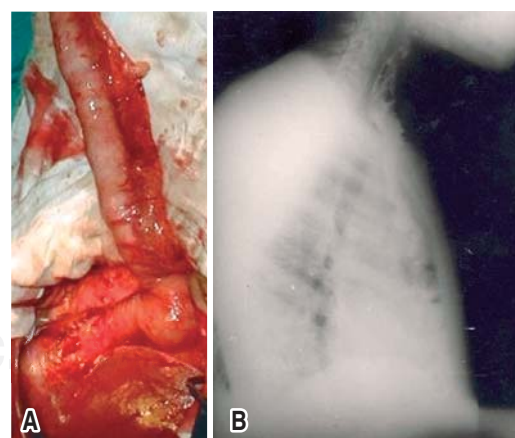


Figure 3. (A) Gastric tube formed from the greater curvature of the stomach and ascended retrosternally. (B) Contrast esophagogram four weeks after performing isoperistaltic esophagogastroplasty.

Of the two patients with primary lung tumors, one developed an esophago-pleuro-cutaneous fistula, and esophageal stenosis 20 years after surgical resection of the lung tumor. A palliative bypass (Rutkowski-Postlethwait) was performed, making it possible to correct the fistula by exclusion. The other patient had a mediastinal lung tumor with esophageal infiltration and was treated with a trans-tumoral handmade stent (*Table I*).

The use of esophageal stents led to 12 complications (9.44%), although the rate was lower with handmade plastic stents (8.33%); the two complications with self-expanding stents developed in the same patient. Two patients suffered from mild retrosternal pain that was relieved by oral analgesics. Handmade stents migrated in two patients, one to the stomach requiring replacement with another stent with a larger upper funnel. In the second case, migration was retrograde. One patient suffered from mild bleeding and there were no cases of aspiration pneumonia. In three patients, the stents became obstructed with pieces of meat (*Figure 4A and B*) and were resolved by endoscopic removal of the foreign material. In the case of the self-expanding metal stent, a piece of meat was stuck in the mesh (*Table II*). During the first postoperative hours, patients with handmade stents complained of a mild plastic taste that disappeared as soon as oral intake was initiated.

Of the 127 patients in the series, oral intake could be restored in 97.64%, with an average patient survival of 11.6 months. Patients with bypasses had better results, especially those who underwent isoperistaltic tubular esophagogastroplasty (*Table III*). As of 2006, with the involvement of GAN, survival increased.

DISCUSSION

Patients seeking medical care for cancer of the esophagus and cardia often present with locally advanced non-resectable tumors (75%)⁷ and metastases to regional lymph nodes, as well as physical wasting and severe malnutrition. Therefore, treatment should focus on relieving dysphagia and offering a good quality of life.^{2,11} Abdominal stomas (permanent gastrostomy or jejunostomy) should be a last-resource option, due to their ethical implications. In order of frequency, the most commonly used strategies are laser surgery, stents, and bypasses. Our approach is consistent with international criteria, adapted to our circumstances and our available means.⁷ Among the different bypasses, our preferred option is the retrosternally ascended isoperistaltic gastric tube, a technique described by M. Rutkowski in 1923 and made popular by Postlethwait at the end of the 70's (Rutkowski M. Esophagoplastica totalis. *Polski Przegląd chirurgiczny*. 1923; 2:134-6). These cases are infrequent, and it is not common to

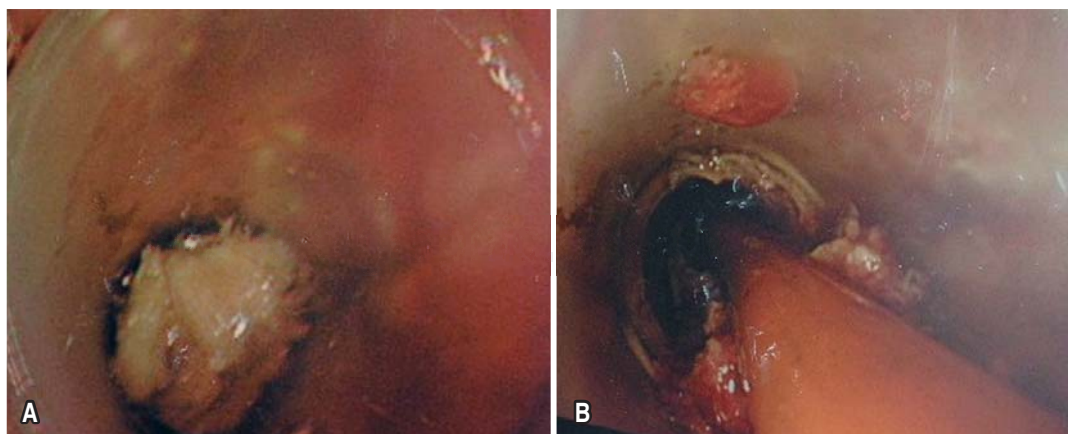


Figure 4. Rigid plastic stent clogged with a piece of chicken (A), and endoscopic removal of the obstruction (B).

Table II. Distribution by immediate and late complications from esophageal stents: 1995-2016.

Esophageal stents 115	Handmade n = 108	Heering n = 3	Self-expandable n = 4
	Immediate		
Mild hematemesis	1	0	0
Retrosternal pain	2	0	0
Heartburn	2	1	0
	Late		
Stent migration to the stomach	1	0	0
Stent migration to the esophagus	1	0	0
Tumor ingrowth through the mesh	0	0	1
Food obstruction	2	0	1
Total	9 (8.33%)	1 (33%)	2 (50%)

Source: patient records on file.

Table III. Distribution by procedure and survival in the three groups with stents, abdominal stomas and bypasses: 1995-2016.

Procedures	127	Average survival
Esophageal stents	115	10.3 months
Surgical bypasses	9	12.3 months
Abdominal stomas	3	6 months

Source: patient records on file.

see patients with non-resectable tumors who have a Karnofsky index and nutritional state allowing an average two-hour-long surgery, compared to the 20 minutes it takes to place a trans-tumoral stent.^{2,11} The isoperistaltic gastric tube is an alternative that makes it possible to eat all kinds of food, unlike stents, with which only liquid or pureed food may be eaten.^{12,13} The Clagett esophagogastrorrhaphy performed in two patients has limited indications.⁶

There is no laser at our hospital, and sometimes commercial stents are not available, but we have been able to forego gastrostomies with the use of absolute alcohol and handmade stents. Using absolute alcohol made it possible to introduce the nasogastric tube after two or three sessions,¹⁴ a crucial step in the placement

of a trans-tumoral stent.^{2,11} Our two cases with esophageal invasion from a primary lung cancer are worth noting. One, with a late recurrence after pneumonectomy, had a 20-month survival after bypass.¹²

Rigid plastic stents of various types have been used for many years and help relieve dysphagia in an acceptable number of patients. Their drawbacks are their rigidity, a small inner diameter, and greater difficulty when placing since the stricture has to be previously dilated; furthermore, they have a higher migration rate. Our complication rate is inferior to that in other series reporting migration, bleeding and aspiration pneumonia at rates between 11% and 15% and between 1% and 5%, respectively.¹⁵⁻²⁰ We had no surgical mortality from stent placement, and complications such as esophageal perforation, necrosis due to pressure on the esophageal wall, ulcers around the stent borders, late bleeding, and tracheoesophageal or mediastinal fistulas did not develop.

The survival, the enhanced quality of life and the fact that 98% of patients could be fed by mouth until death are worth noting. Although we only had seven commercial stents, survival was prolonged with the use of total pre- and post-operative nutrition, thanks to our nutritional support group, GAN.^{21,22}

These results contrast with the approach to the disease in previous decades at our hospital. From 1965 through 1978, in 67.1% of 70 patients with advanced esophageal cancer, a gastrostomy was performed as definitive treatment. (Roque, Pedro Pablo. Tesis de terminación de la especialidad: "Tratamiento del cáncer de esófago". Havana, 1978).

Upon review of this study, we can conclude that in patients with esophageal cancer, oral intake should be the goal and, even in cases with non-resectable tumors, the best possible quality of life should be offered by means of palliative treatment approaches that forego abdominal stomas. The use of handmade Teflon stents, alcohol infiltration to cause necrosis, tumor tunneling and bypasses, are all options that offer an ethical solution to these patients' situation, with significant savings in the case of handmade stents.

Acknowledgments

The authors acknowledge the support from students Orlando Noel Mederos Trujillo and Jorge González Lara as surgical assistants.

REFERENCES

1. Saa VR, Mederos CO, Barrera OJ, Rodríguez HT, Martín GL. Implantación de prótesis transtumoral en el cáncer de esófago irresecable. *Rev Cir Esp*. 1996; 59: 949-945.
2. Barreras OJ, Mederos CO, Romero DC, Cantero RA, Menchaca DJ, Castellano JA. Estrategia en el cáncer de esófago torácico y cardias irresecable. *Rev Cubana Cir*. 2001; 40: 119-122.
3. Barreras OJ, Mederos CO, Menchaca DJ, Romero DC, Cantero RA, Valdés JJ. Resultados quirúrgicos en el cáncer de esófago y cardias. *Rev Cub Oncol*. 2000; 16: 116-119.
4. García GA. Tumores del esófago. *Rev Cubana Cir*. 2007; 46: 1-5.
5. Saa VR, Mederos CO, Barreras OJ, Romero DC, Cantero RA, Valdés JJ. Afecciones quirúrgicas del esófago y cardias: estudio de una década. *Rev Cubana Cir*. 2002; 41: 135-140.
6. Mederos CO, Barreras OJ, Romero DC, Cantero RA, Menchaca DJ, Cantero RA. Bypass gástrico tubular isoperistáltico (Postlethwait) en el cáncer de esófago irresecable. *Rev Cubana Oncol*. 2001; 17: 135-137.
7. Mederos CO, Leal MA, García GA, Barrera OJ, Valdés JJ, Romero DC, et al. Qué hacen y qué hacemos en el cáncer de esófago y cardias. *Rev Cubana Cir*. 2005; 44: 1-10.
8. Wadleigh RG, Abbasi S, Korman L. Palliative ethanol injections of unresectable advanced esophageal carcinoma combined with chemoradiation. *Am J Med Sci*. 2006; 331: 110-112.
9. Park JJ, Lee YC, Kim BK, Kim JH, Park JC, Kim YJ, et al. Long term clinical outcomes of self-expanding metal stents for treatment of malignant gastro esophageal junction obstructions and prognostic factors for stent patency: effects of anticancer treatments. *Digestive and Liver Disease*. 2010; 42: 436-40.
10. Campo AR, Mederos CO, Millán SR. Algunas reflexiones bioéticas en la atención de pacientes ancianos con hernia inguinal. *Arch Cir Gen*. 2005 [citado el 15 de mayo de 2012]. Available in: <http://www.cirugest.com/revista/2005/11/2005-05-05.hmt>
11. Barreras OJ, Mederos CO, Romero DC, Cantero RA, Del Campo AR, Valdés JJ. Cáncer no resecable de esófago y cardias. ¿Prótesis o tubo gástrico? *Arch Cir Gen Dig*. [citado el 15 de mayo de 2012]. Available in: <http://www.cirugest.com/revista/2005/02/2005-01-24.htm>
12. Mederos CO, Barrera OJ, Romero DC, Cantero RA, Valdés JJ. Fístula esofagopleurocutánea de tercio medio: a propósito de un caso. *Rev Cubana Cir*. 2004; 43(2).
13. Mederos CO, Valdés JJ, Del Campo AR, Cantero RA, Barrera OJ, Romero DC et al. Resultados quirúrgicos con tubos gástricos y anastomosis cervical en el cáncer de esófago. *Rev Arch Cir Gen Dig*. [Citado 10 Jul 2006]. Available in: <http://www.cirugest.com/revista/2006/07/2006-07-10.htm>
14. Barrera OJ, Mederos CO, Da Costa FJ, Gigato DA. Efectividad del alcohol absoluto para canalizar los tumores irresecables de esófago. *Rev Cubana Cir*. 2010; 49: 9-14.
15. Mosca F, Consoli A, Stracqualursi A, Persi A, Lipari G, Portale TR. Our experience with the use of a plastic prosthesis and self-expanding stents in the palliative treatment of malignant neoplastic stenosis of the esophagus and cardia. Comparative analysis of results. *Chir Ital*. 2002; 54: 341-350.
16. Ross WA, Alkassab F, Lynch PM, Ayers GD, Ajani J, Lee JH, Bismar M. Evolving role of self-expanding metal stents in the treatment of malignant dysphagia and fistulas. *Gastrointest Endosc*. 2007; 65: 70-76.
17. Tangen M, Andresen SJ, Moum B, Hauge T. Stent insertion as palliation of cancer in the esophagus and cardia. *Tidsskr Nor Laegeforen*. 2006; 126: 1607-1609.
18. Schoppmeyer K, Golsong J, Schiefke I, Mossner J, Caca K. Antireflux stents for palliation of malignant esophagocardial stenosis. *Dis Esophagus*. 2007; 20: 89-93.
19. Park JJ, Lee YC, Kim BK, Kim JH, Park JC, Kim YJ, et al. Long term clinical outcomes of self-expanding metal stents for treatment of malignant gastro esophageal junction obstructions and prognostic factors for stent patency: effects of anticancer treatments. *Digestive and Liver Disease* 2010; 42:436-40.
20. Ledeire S, Di Fiore F, Antonietti M, Ben Soussan E, Hellot MF, Grigioni S. Undernutrition is predictive of early mortality after palliative self-expanding metal stent insertion in patients with inoperable or recurrent

- esophageal cancer. *Gastrointest Endosc.* 2006; 64: 479-484.
21. Nozoe T, Kimura Y, Ishida M, Saeke H, Konenaga D, Sugimachi K. Correlation of pre-operative nutritional condition with post-operative complications in surgical treatment for esophageal carcinoma. *Eur J Surg Oncol.* 2002; 28: 396-400.
22. Murphy PM, Modi P, Rahamim J, Wheatley T, Lewis SJ. An investigation into the current peri-operative nutritional management of oesophageal carcinoma

patients in major carcinoma center in England. *Ann R Coll Surg Engl.* 2006; 88: 358.

Mailing address:

Juan Carlos Barrera Ortega

E-mail: jcbarrera@infomed.sld.cu

Orestes Noel Mederos Curbelo

E-mail: noemed@infomed.sld.cu

www.medigraphic.org.mx