**Trad Revista Cubana de Medicina Intensiva y Emergencias**

**4/2019**

**A631**

**Fluid response with the right internal jugular vein distensibility index**

**Respuesta al fluido con el índice de distensibilidad de la vena yugular interna derecha**

**ABSTRACT**

**Objective:** To value the ability of the right internal jugular vein distensibility index to identify the fluid response in critically ill patients ventilated.

**Methods**: A prospective study was conducted from July 2017 to February 2018 in the Intensive Care Unit - 8B at Hermanos Ameijeiras Surgical Clinical Hospital. The sample consisted of 87 ventilated patients with an indication of intravenous fluid infusion. The distensibility index of the inferior vena cava and the right internal jugular vein was determined by two methods: A-) (maximum diameter in inspiration - minimum in expiration) / minimum diameter; and B-) (maximum diameter in inspiration - minimum in expiration) / average. The fluid response was defined with lower vena cava distensibility index> 18% and> 12% for method A and B, respectively. The ability of the right internal jugular vein distensibility index to discriminate between patients, whether they respond or not to the fluid, was evaluated with the area under the curve of the receiver's operating characteristics.

**Results**: The correlation between the distensibility index of the inferior vena cava and the right internal jugular vein was significant with method A (r2 = 0.64; p <0.0001) and with method B (r2 = 0, 66; p <0.0001). The prevalence of the response to volume was 41.4% and 43.7% with method A and B, respectively. The right internal jugular vein distensibility index had an area under the curve of 0.83 (p <0.0001) with both methods. With method A we had a cut-off value of 5.76%, the sensitivity and specificity was 88.9% and 68.6%, respectively. With method B, there was a cut-off value of 5.60%, the sensitivity was 86.8% and the specificity was 69.4%.

**Conclusions:** The right internal jugular vein distensibility index is a feasible alternative to the inferior vena cava distensibility index to assess the fluid response in ventilated critically ill patients. Other studies are needed to confirm these results.

**Keywords:** volume response; inferior vena cava; internal jugular vein; mechanic ventilation.

**Referencias bibliográficas**

1- Martos-Benítez FD, Guzmán-Breff BI. Expansión del volumen y variación en los parámetros hemodinámicos. Emergencias. 2018;30:177-81.

2- [Avni T](https://www.ncbi.nlm.nih.gov/pubmed/?term=Avni%20T%5BAuthor%5D&cauthor=true&cauthor_uid=26237037), [Lador A](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lador%20A%5BAuthor%5D&cauthor=true&cauthor_uid=26237037), [Lev S](https://www.ncbi.nlm.nih.gov/pubmed/?term=Lev%20S%5BAuthor%5D&cauthor=true&cauthor_uid=26237037), [Leibovici L](https://www.ncbi.nlm.nih.gov/pubmed/?term=Leibovici%20L%5BAuthor%5D&cauthor=true&cauthor_uid=26237037), [Paul M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Paul%20M%5BAuthor%5D&cauthor=true&cauthor_uid=26237037), [Grossman A](https://www.ncbi.nlm.nih.gov/pubmed/?term=Grossman%20A%5BAuthor%5D&cauthor=true&cauthor_uid=26237037). Vasopressors for the Treatment of Septic Shock: Systematic Review and Meta-Analysis. [PLoS One.](https://www.ncbi.nlm.nih.gov/pubmed/26237037) 2015;10:e0129305.

3- [Colling KP](https://www.ncbi.nlm.nih.gov/pubmed/?term=Colling%20KP%5BAuthor%5D&cauthor=true&cauthor_uid=29336676), [Banton KL](https://www.ncbi.nlm.nih.gov/pubmed/?term=Banton%20KL%5BAuthor%5D&cauthor=true&cauthor_uid=29336676), [Beilman GJ](https://www.ncbi.nlm.nih.gov/pubmed/?term=Beilman%20GJ%5BAuthor%5D&cauthor=true&cauthor_uid=29336676). Vasopressors in Sepsis. [Surg Infect (Larchmt).](https://www.ncbi.nlm.nih.gov/pubmed/29336676) 2018;19:202-7.

4- Marik PE. Iatrogenic salt water drowning and the hazards of a high central venous pressure. Ann Intensive Care. 2014;4:21.

5- Monnet X, Marik PE, Teboul JL. Prediction of fluid responsiveness: an update. Ann. Intensive Care. 2016;6:111.

6- Boyd JH, Sirounis D, Maizel J, Slama M. Echocardiography as a guide for fluid management. Crit Care. 2016;20:274.

7- Broilo F, Meregalli A, Friedman G. Right internal jugular vein distensibility appears to be a surrogate marker for inferior vena cava vein distensibility for evaluating fluid responsiveness. Rev Bras TerIntensiva. 2015;27:205-11.

8- [Guarracino](https://www.ncbi.nlm.nih.gov/pubmed/?term=Guarracino%20F%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) F, [Ferro](https://www.ncbi.nlm.nih.gov/pubmed/?term=Ferro%20B%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) B, [Forfori](https://www.ncbi.nlm.nih.gov/pubmed/?term=Forfori%20F%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) F, [Bertini](https://www.ncbi.nlm.nih.gov/pubmed/?term=Bertini%20P%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) P, [Magliacano](https://www.ncbi.nlm.nih.gov/pubmed/?term=Magliacano%20L%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) L, [Pinsky](https://www.ncbi.nlm.nih.gov/pubmed/?term=Pinsky%20MR%5BAuthor%5D&cauthor=true&cauthor_uid=25475099) MR. Jugular vein distensibility predicts fluid responsiveness in septic patients. [Crit Care](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4301660/). 2014;18:647.

9- Miller A, Mandeville J. Predicting and measuring fluid responsiveness with echocardiography. [Echo Res Pract. 2016;3:G1-G12](http://www.ncbi.nlm.nih.gov/pubmed/27249550?dopt=Abstract).

10- [Toscani](https://www.ncbi.nlm.nih.gov/pubmed/?term=Toscani%20L%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) L, [Aya](https://www.ncbi.nlm.nih.gov/pubmed/?term=Aya%20HD%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) HD, [Antonakaki](https://www.ncbi.nlm.nih.gov/pubmed/?term=Antonakaki%20D%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) D, [Bastoni](https://www.ncbi.nlm.nih.gov/pubmed/?term=Bastoni%20D%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) D, [Watson](https://www.ncbi.nlm.nih.gov/pubmed/?term=Watson%20X%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) X, [Arulkumaran](https://www.ncbi.nlm.nih.gov/pubmed/?term=Arulkumaran%20N%5BAuthor%5D&cauthor=true&cauthor_uid=28774325) N, et al. What is the impact of the fluid challenge technique on diagnosis of fluid responsiveness? A systematic review and meta-analysis. [Crit Care](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5543539/). 2017;21:207.

11- [Claure-Del Granado](https://www.ncbi.nlm.nih.gov/pubmed/?term=Claure-Del%20Granado%20R%5BAuthor%5D&cauthor=true&cauthor_uid=27484681) R, [Mehta](https://www.ncbi.nlm.nih.gov/pubmed/?term=Mehta%20RL%5BAuthor%5D&cauthor=true&cauthor_uid=27484681) RL. Fluid overload in the ICU: evaluation and management. [BMC Nephrol](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4970195/). 2016;17:109.

12- [Zhang Z](https://www.ncbi.nlm.nih.gov/pubmed/?term=Zhang%20Z%5BAuthor%5D&cauthor=true&cauthor_uid=24495437), [Xu X](https://www.ncbi.nlm.nih.gov/pubmed/?term=Xu%20X%5BAuthor%5D&cauthor=true&cauthor_uid=24495437), [Ye S](https://www.ncbi.nlm.nih.gov/pubmed/?term=Ye%20S%5BAuthor%5D&cauthor=true&cauthor_uid=24495437), [Xu L](https://www.ncbi.nlm.nih.gov/pubmed/?term=Xu%20L%5BAuthor%5D&cauthor=true&cauthor_uid=24495437). Ultrasonographic measurement of the respiratory variation in the inferior vena cava diameter is predictive of fluid responsiveness in critically ill patients: systematic review and meta-analysis. [Ultrasound Med Biol.](https://www.ncbi.nlm.nih.gov/pubmed/24495437?dopt=Abstract) 2014;40:845-53.

**670**

Use of a prognostic recovery system in postoperative period of emergency abdominal surgery

**Aplicación de un sistema pronóstico de reoperación en el posoperatorio de cirugía abdominal de urgencia**

**ABSTRACT**

**Objective:** To make evident the clinical validity of the support system for the prognosis of reoperation in the postoperative period of emergency abdominal surgery.

**Methods**: An explanatory, observational, cohort, prospective study was conducted from November 2016 to April 2017, with 59 patients who were in the postoperative period of major abdominal surgery and were admitted to the intermediate care units at Miguel Enriquez Surgical Clinical Hospital and in the Intensive Care Unit 8B at Hermanos Ameijeiras" Surgical Clinical Hospital. In order to decide the reoperation, these patients were evaluated according to clinical, laboratory and imaging criteria. Regardless of this evaluation, the probability of requiring reoperation through the aid system was estimated. For analyzing its utility, ROC curve was used and the best cut-off point with validity indicators was selected.

**Results**: 34% of the patients were reoperated (N = 20). The prognostic system correctly identified 85.7% of the patients that really needed to be reoperated (CI 68.4-100) and ignored 94.7% of the patients that did not need it (CI 86.3-100). The areas under the curve were 0.932 (CI 21-46.8) and 0.902 (CI 0.810-0.993) for reoperation and positive findings, respectively. The cut-off point with better sensitivity and specificity indicators was 0.635 in both cases.

**Conclusions**: The help system for the reoperation prognosis of proved to have excellent predictive value of the need for reoperation in patients with major abdominal post-surgery. It can be useful in clinical practice.

**Keywords:** abdominal cavity; reoperation; prognosis; general surgery; emergency surgery

# **Referencias bibliográficas**

1. Rausei S, Pappalardo V, Ruspi L, Colella A, Giudici S, Ardita V, et al. Early Versus Delayed Source Control in Open Abdomen Management for Severe Intra-abdominal Infections: A Retrospective Analysis on 111 Cases. World Journal of Surgery. 2017;42:707-12 pp. DOI: 10.1007/s00268-017-4233-y

2. Rettig TC, Verwijmeren L, Dijkstra IM, Boerma D, van de Garde EM, Noordzij PG. Postoperative Interleukin-6 Level and Early Detection of Complications After Elective Major Abdominal Surgery. Annals of Surgery. 2016 Jun;263(6):1207-12. DOI: 10.1097/sla.0000000000001342

3. Kamil RF, Lalisang TJ, Kekalih A. Merit of APACHE II, MPI and ARPI scores as determinants On Demand Relaparotomy. The New Ropanasuri Journal of Surgery. 2016;1(1):16-8. DOI: 10.7454/nrjs.v1i1.5

4. van Ruler O, Kiewiet JJ, Boer KR, Lamme B, Gouma DJ, Boermeester MA, et al. Failure of available scoring systems to predict ongoing infection in patients with abdominal sepsis after their initial emergency laparotomy. BMC Surgery. 2011 Dec 23;11:38. DOI: 10.1186/1471-2482-11-38

5. Tolonen M, Coccolini F, Ansaloni L, Sartelli M, Roberts DJ, McKee JL, et al. Getting the invite list right: a discussion of sepsis severity scoring systems in severe complicated intra-abdominal sepsis and randomized trial inclusion criteria. World Journal of Emergency Surgery. 2018;13:17. DOI: 10.1186/s13017-018-0177-2

6. Sartelli M, Catena F, Abu-Zidan FM, Ansaloni L, Biffl WL, Boermeester MA, et al. Management of intra-abdominal infections: recommendations by the WSES 2016 consensus conference. World Journal of Emergency Surgery. 2017;12(1):22. DOI: 10.1186/s13017-017-0132-7

7. Lombardo Vaillant Tomás Ariel, Soler Morejón Caridad de Dios, Tamargo Barbeito Teddy Osmin, Yanko NA, inventors; Hospital Clínico Quirúrgico Hermanos Ameijeiras, assignee. SAPRCA. Sistema de ayuda para el pronóstico de reintervención en cirugía abdominal. Cuba patent 2719-09-2017. 2017.

8. Soler-Morejon CD, Lombardo-Vaillant TA, Tamargo-Barbeito TO, Wise R, Malbrain M. Re-operative abdominal predictive score: a prognostic model combining Acute Re-intervention Predictive Index and intra-abdominal pressure. Anaesthesiology intensive therapy. 2017;49(5):358-65. DOI: 10.5603/AIT.a2017.0069

9. Pusajo JF, Bumaschny E, Doglio GR, Cherjovsky MR, Lipinszki AI, Hernandez MS, et al. Postoperative intra-abdominal sepsis requiring reoperation. Value of a predictive index. Archives of surgery (Chicago, Ill : 1960). 1993 Feb;128(2):218-22;23. DOI: 10.1001/archsurg.1993.01420140095015

10. Lombardo Vaillant TA, Soler Morejón C, Lombardo Vaillant J, Casamayor Laime Z. Aplicación del índice predictivo de reintervención abdominal en el diagnóstico de complicaciones infecciosas intraabdominales. Rev Cub Med Mil. 2009 [citado: 20/06/2019];38(1). Disponible en: <http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0138-65572009000100002&nrm=iso>

11. Cheatham ML, Safcsak K. Intraabdominal pressure: a revised method for measurement. Journal of the American College of Surgeons. 1998 May [citado: 20/06/2019];186(5):594-5. Disponible en: <https://doi.org/10.1016/S1072-7515(98)00122-7>

12. Kirkpatrick AW, Roberts DJ, De Waele J, Jaeschke R, Malbrain ML, De Keulenaer B, et al. Intra-abdominal hypertension and the abdominal compartment syndrome: updated consensus definitions and clinical practice guidelines from the World Society of the Abdominal Compartment Syndrome. Intensive Care Med. 2013 Jul;39(7):1190-206. DOI: 10.1007/s00134-013-2906-z

13. Avorn J. The Psychology of Clinical Decision Making - Implications for Medication Use. New Engl J Med. 2018 [citado: 20/06/2019];378:689-91. Disponible en: <https://www.nejm.org/doi/full/10.1056/NEJMp1714987>

\*\*\*/

Traducción: [Gretchen González Nieto](mailto:gretchen@infomed.sld.cu)  
Grupo de Traducciones  
CNICM-Infomed  
17 de enero de 2020