

# The acceptance of changes in the management of patients with acute pancreatitis after the revised Atlanta Classification

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**ABSTRACT – Background** – New recommendations for the management of patients with acute pancreatitis were set after the Atlanta Classification was revised in 2012. **Objective** – The aim of the present systematic review is to assess whether these recommendations have already been accepted and implemented in daily medical practices. **Methods** – A systematic literature review was carried out in studies conducted with humans and published in English and Portuguese language from 10/25/2012 to 11/30/2018. The search was conducted in databases such as PubMed/Medline, Cochrane and SciELO, based on the following descriptors/*Boolean* operator: “Acute pancreatitis” AND “Atlanta”. Only Randomized Clinical Trials comprising some recommendations released after the revised Atlanta Classification in 2012 were included in the study. **Results** – Eighty-nine studies were selected and considered valid after inclusion, exclusion and qualitative evaluation criteria application. These studies were stratified as to whether, or not, they applied the recommendations suggested after the Atlanta Classification revision. Based on the results, 68.5% of the studies applied the recommendations, with emphasis on the application of severity classification (mild, moderately severe, severe); 16.4% of them were North-American and 14.7% were Chinese. The remaining 31.5% just focused on comparing or validating the severity classification. **Conclusion** – Few studies have disclosed any form of acceptance or practice of these recommendations, despite the US and Chinese efforts. The lack of incorporation of these recommendations didn't enable harnessing the benefits of their application in the clinical practice (particularly the improvement of the communication among health professionals and directly association with the worst prognoses); thus, it is necessary mobilizing the international medical community in order to change this scenario.

**HEADINGS** – Pancreatitis. Classification. Severity of illness index. Prognosis.

## INTRODUCTION

Pancreatitis consists in the inflammatory process affecting the pancreatic tissue and adjacent areas; the disease can present acute or chronic evolution and records significant incidence in its acute form (from 13 to 45 patients per 100,000 inhabitants per year, previously demonstrated from a nationwide survey in Japan)<sup>(1,2)</sup>. Its diagnosis is based on the identification of at least two of the following symptoms: pain in the upper abdomen; amylase and/or lipase values higher than three times the normal reference values; evidence of inflammation in the pancreatic and/or peripancreatic tissue based on complementary imaging examination<sup>(3)</sup>.

Propositions focused on changing the concepts and treatment of acute pancreatitis, mainly on the best way to determine the severity of patients, from the beginning of symptoms (abdominal pain), emerged after the publication of the Revised Atlanta Classification on 10/25/2012<sup>(4)</sup>. Currently, based on the new recommendations, systemic or local signs of inflammation, the presence or absence of temporary or persistent organ failure (determined based on the modified Marshall classification), and the incidence of local complications (i.e., the incidence

of acute liquid collections and of sterile or infected necrosis) are criteria adopted to determine the severity of patients with acute pancreatitis<sup>(3-5)</sup>. Thus, patients with acute pancreatitis were classified as MILD (absence of organ failure and local or systemic complications), MODERATELY SEVERE (absence of organ failure or, when it happens, it is transient – i.e., it disappears within 48 hours – and can be associated, or not, with local or systemic complications), SEVERE (persistent organ failure – i.e., it remains for more than 48 hours and, when associated with infected pancreatic necrosis, features the most severe conditions, which are associated with the highest mortality rates)<sup>(2-5)</sup>.

Another recent attempt to enhance the severity classification of the patients with acute pancreatitis was the Determinant-Based Classification (DBC). This classification was also developed by several experts worldwide and published simultaneously a the revised Atlanta Classification by the end of 2012, consolidating that the presence of local determinants (sterile or infected pancreatic and/or peripancreatic necrosis) and systemic determinants (transient or persistent organ failure) would be the most appropriated criteria to classify the patients into four categories: mild, moderate, severe and critic, related to their severity<sup>(5,6-11)</sup>. However, the DBC was

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more minded to the establishment of the severity classification, meanwhile, the revised Atlanta Classification of 2012 presents wider recommendations related to the clinical management of the patients with acute pancreatitis<sup>(6-11)</sup>.

Thus, the use of multifactor scoring methods such as Ranson, APACHE II, Glasgow, SAPS II, among others, to determine the severity of patients with acute pancreatitis is no longer recommended<sup>(12,13)</sup>. The delay in establishing patients' severity level is one of the main disadvantages associated with the use of scoring methods such as the Ranson criteria (the most used system in past clinical practices), which requires 48 hours to determine the severity of acute pancreatitis<sup>(14)</sup>. Moreover, this 48-hour period is not based on the onset of the clinical picture, but on the hospitalization date, when the first complementary serum exams are performed<sup>(14)</sup>. Although APACHE II (another among the most used criteria) can be calculated in the first 24 hospitalization hours, it was originally developed to be applied in Intensive Care Units and requires the analysis of 12 parameters in order to estimate a possible organ failure. Therefore, this complex method comprises many criteria that are not directly correlated to the prognosis of patients with pancreatitis<sup>(15)</sup>.

In addition, other possible serum markers have been evaluated to help improving the implementation of criteria capable of determining the severity of patients with acute pancreatitis, based on laboratory tests such as hematocrit, urea, C-reactive protein and other inflammatory cytokines<sup>(16)</sup>. Some prognostic risk factors focused on predicting the most severe forms of acute pancreatitis have also been investigated. So far, only overweight (body mass index >25 kg/m<sup>2</sup>) and hyperglycemia (blood glucose level higher than 11.1 mmol/L or 200 mg/dL) have been identified and established as eligible factors<sup>(13,17)</sup>.

The best detailing of local complications such as acute peripancreatic collections, sterile or infected pancreatic and peripancreatic necrosis, pseudocysts, and sterile or infected delimited pancreatic necrosis stands out among concepts that changed after the Atlanta Classification revision<sup>(4,18,19)</sup>. Acute peripancreatic collections can develop near the pancreas in the early stage of the disease (often within 48 hours after clinical picture onset) and do not present internal solid component<sup>(4,18,19)</sup>. Pseudocysts are amylase-rich liquid collections (without solid components) whose external area simulates a pseudocapsule in the pancreatic and/or peripancreatic region; they emerge after four weeks of disease evolution<sup>(4,18,19)</sup>. On the other hand, acute necrotic collections are liquid collections associated with necrotic tissues in the pancreas and/or in the peripancreatic region; in most cases, they can maintain communication with the pancreatic duct or with its branches<sup>(4)</sup>. Delimited pancreatic necrosis is a necrotic collection found within a fibrotic capsule; it often becomes fibrotic 4 weeks after the onset of acute necrotizing pancreatitis<sup>(4,18-20)</sup>.

Finally, based on the best scientific evidences, the application of the new concepts and recommendations published after the revision of the Atlanta Classification in the clinical practice has several advantages and benefits such as: 1. Improving the therapeutic conduct and dialogue among different health professionals involved in the management of patients with acute pancreatitis through the establishment of new criteria, as well as of more uniform and precise terminologies, to diagnose and identify, mainly, the forms of local complications<sup>(21-24)</sup>; 2. Improving the severity stratification of patients with acute pancreatitis, based on the importance given to the incidence of organ failure in the classification of (mild,

moderately severe and severe) acute pancreatitis<sup>(4,21)</sup>; 3. Facilitating and improving the management and monitoring of the therapeutic success of patients with acute pancreatitis through the inclusion of new imaging criteria to classify the tomographic findings in the evaluation of these patients<sup>(22)</sup>; 4. Helping the medical community to plan clinical studies based on standardized parameters, which will have impacts on the recommendations for the establishment of future interventions and specific treatments for patients with acute pancreatitis<sup>(18,21,24)</sup>; 5. Identifying the role played by infected necrosis as determinant factor of high mortality rates associated with the prognosis of acute pancreatitis<sup>(21,22)</sup>.

Unfortunately, despite the advantages and benefits mentioned above, it seems that the world has not fully adhered to the new recommendations issued after the Revised Atlanta Classification for acute pancreatitis<sup>(4)</sup>. Thus, the aims of the current systematic review were to evaluate this scenario and to investigate whether these recommendations have already been accepted and implemented in current medical practices<sup>(24,25)</sup>.

## METHODS

A systematic review of the medical literature, based on recommendations of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol, was carried out in studies conducted with humans, which were published in English and Portuguese languages, from 10/25/2012 to 11/30/2018. The search was performed in electronic databases such as PubMed/Medline, SciELO and Cochrane, based on the following descriptors/*Boolean* operator: "Acute pancreatitis" AND "Atlanta"<sup>(26,27)</sup>. Inclusion and exclusion criteria were applied and a qualitative analysis of the studies was performed to select valid and eligible articles for future inferences disclosed in the current review.

### Inclusion criteria

Only articles meeting the following characteristics were included in the study: 1. Randomized Clinical Trials-type studies; 2. Studies comparing the efficiency of prognostic markers (chemical/biological/clinical parameter) to established concepts, after the Atlanta Classification revision, in order to determine the severity of patients with acute pancreatitis; 3. Studies focused on investigating parameters and/or prognostic markers for acute pancreatitis, based on criteria established after the Atlanta Classification revision – even if only to divide the groups evaluated in the study sample; 4. Studies comparing rating scores and prognosis predictors for the classification and determination of acute pancreatitis severity cases (among them, the criteria established after the Atlanta Classification revision); 5. Studies focused on presenting the clinical evolution of acute pancreatitis with, or without, therapeutic intervention and on determining the severity of patients based on recommendations established after the Atlanta Classification revision; 6. Studies aimed at evaluating or validating the recommendations established after the Atlanta Classification revision.

### Exclusion criteria

We excluded studies that did not meet the inclusion criteria, as well as those that did not mention the recommendations established after the Atlanta Classification revision (i.e., studies published after 2012, whose implementation and/or data collection were performed before this year, when the Atlanta Classification revision had not yet been published and, consequently, released for consultation).

## Data extraction and qualitative analysis

The search for studies was based on pre-established qualitative criteria, as described in the methodology of the current review. The information was collected and recorded in a standardized Excel data sheet (Microsoft Corp., Redmond, WA). Discrepancies identified during data sorting or throughout the extraction process were resolved through consensus among the authors. The initial qualitative selection of the studies was based on ABSTRACT reading in order to analyze the aims and outcomes, according to pre-established inclusion and exclusion criteria. Subsequently, the selected studies were fully read to enable<sup>(6-9,11,16,28-110)</sup>.

Exceptionally, in order to clarify some discussion points, the search in the databases was extended to studies presenting design different from the randomized clinical trial, a fact that enabled using more than one study<sup>(11)</sup>. However, according to the inclusion and exclusion criteria of this review, the selected study, which presented different design from the clinical trial, was not taken into consideration in the results, nor was it added to the tables, in order to respect the methodological proposal of this systematic review<sup>(11)</sup>.

## RESULTS

One hundred and seventy-four (174) studies were initially identified. Next, they were subjected to the inclusion and exclusion criteria and to qualitative analysis (according to the PRISMA protocol), which made it possible selecting 89 valid studies, as shown in FIGURE 1<sup>(26,27)</sup>.

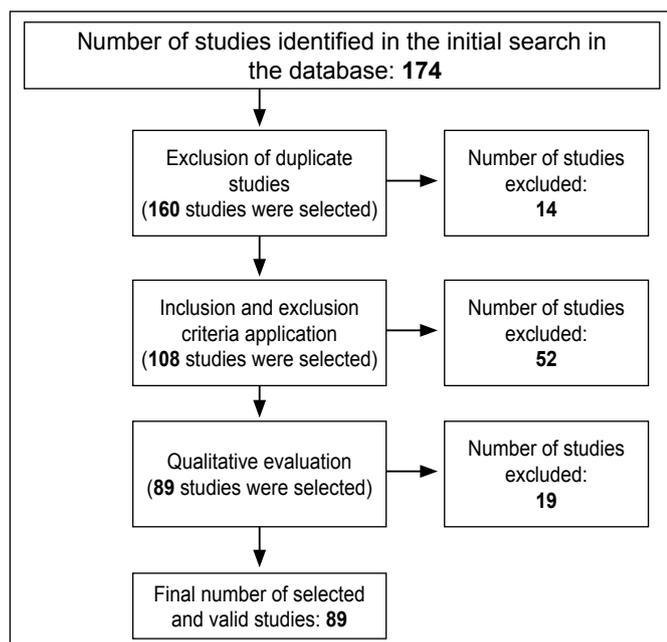


FIGURE 1. Outlining the selection of valid studies based on PRISMA Protocol.

The herein selected 89 valid studies were recorded and stratified as to whether, or not, they applied the recommendations and/or concepts proposed and disclosed after the Atlanta Classification revision. The studies applying these recommendations were those that, based on these principles, established and determined the severity of the investigated patients (mild, moderately severe, severe) in order to evaluate their clinical evolution (TABLE 1)<sup>(16,28-87)</sup>.

Other studies that did not apply these concepts and/or recommendations to categorize patients' severity were subdivided as follows: studies that just compared the efficiency of prognostic markers (chemical / biological / clinical parameter) and of old rating scores to the new concepts used to determine the severity of patients, which were disclosed after the Atlanta classification revision (TABLE 2)<sup>(6-9,88-100)</sup>; and studies that just evaluated and validated the recommendations issued after the Atlanta Classification revision (TABLE 3)<sup>(11,101-110)</sup>.

Based on TABLES 1, 2 and 3, 68.5% (61/89) of the studies applied the recommendations disclosed after the Atlanta Classification revision. Most studies that have applied the recommendations after the Atlanta Classification revision were North-American (16.4% = 10/61) and Chinese (14.7% = 9/61) (FIGURE 2). On the other hand, most studies that have compared prognostic factors to rating scores in order to evaluate the new recommendations were Chinese (41.2% = 7/17), and they were followed by North-American studies (11.8% = 2/17).

## DISCUSSION

Most studies (68.5% = 61/89) adhered to and applied the new recommendations published after the Atlanta Classification revision to their sampling. The main aim of more than half of these studies (55.7% = 34/61) was to evaluate the clinical evolution of patients based on the application of the new severity classification proposal (mild, moderately severe and severe). The remaining studies (44.2% = 27/61) used these recommendations to divide their sample; they took the severity classification as standard and, later, they investigated other factors capable of determining the prognosis of patients. In fact, these studies stood out, mainly because they presented and reinforced the reliability of the severity classification published after the Atlanta revision. Publications from countries located in continents such as Africa and Oceania were not identified. Latin America also presented few studies; Brazil (3.3% = 2/61) and Mexico (4.9% = 3/61) were the only Latin American countries presenting studies about this topic. In addition, although no European country has individually played a significant role in the number of publications, the analysis of the whole set of publications enabled seeing that Poland (6.6% = 4/61), Croatia (4.9% = 3/61) and Finland (4.9% = 3/61) have made considerable contributions to understand the natural clinical evolution of patients which severity was determined by the revised Atlanta classification. Despite the Chinese and American leadership in the number of publications, one should take into consideration a possible numerical overestimation bias due to their great economic and demographic power<sup>(112)</sup>. (FIGURE 2)

China (41.2% = 7/17) and the United States (11.8% = 2/17) also recorded the largest number of publications among studies that just compared the efficiency of prognostic markers (C-reactive protein, hematocrit, red cell distribution width – RDW, serum calcium, thrombin-antithrombin III complex, brain natriuretic peptide – BNP, procalcitonin, apolipoprotein B, pentraxin 3 – PTX3, growth differentiation factor 15 – GDF-15, urea and body mass index) and of old rating scores (Ranson, Apache II, BISAP, PANC 3, DBC) to the new concepts aimed at determining the severity of patients with acute pancreatitis, which were released after the Atlanta classification revision (TABLE 2)<sup>(16,38,41,60,67,87,99)</sup>. However, European countries such as Spain (11.8% = 2/17) and the United Kingdom (11.8% = 2/17)

**TABLE 1.** List of studies that applied the recommendations and concepts proposed after the Atlanta Classification revision, establishing the severity of the investigated patients in mild, moderately severe or severe, in order to evaluate their clinical evolution.

Author	Publication year	Number of participants	Adopted Atlanta Revision Criteria	Nationality
Weitz G <sup>(28)</sup>	2014	391	Severity Classification	Germany
Karabulut UJ <sup>(29)</sup>	2014	98	Severity Classification	Brazil
Murilo GB <sup>(30)</sup>	2016	58	Severity Classification	Brazil
Sun Y <sup>(31)</sup>	2015	43	Severity Classification	China
Zhu Y <sup>(32)</sup>	2017	3260	Severity Classification	China
Zeng Y <sup>(33)</sup>	2014	90	Severity Classification	China
Li G <sup>(34)</sup>	2016	35	Diagnosis	China
Deng LH <sup>(16)</sup>	2017	70	Severity Classification	China
Lin S <sup>(55)</sup>	2017	671	Severity Classification	China
Qi X <sup>(56)</sup>	2017	204	Severity Classification	China
Jia R <sup>(37)</sup>	2015	85	Severity Classification	China
Xiao S <sup>(38)</sup>	2015	153	Diagnosis	China
Joon HC <sup>(39)</sup>	2015	153	Severity Classification	South Korea
Huh JH <sup>(40)</sup>	2018	191	Severity Classification	South Korea
Kim BG <sup>(41)</sup>	2013	50	Severity Classification / Diagnosis	South Korea
Cho JH <sup>(42)</sup>	2018	60	Severity Classification	South Korea
Mikolasevic <sup>(43)</sup>	2016	198	Severity Classification	Croatia
Mikolasevic <sup>(44)</sup>	2016	609	Severity Classification / Diagnosis	Croatia
Trgo G <sup>(45)</sup>	2016	40	Severity Classification	Croatia
Vujasinovic <sup>(46)</sup>	2014	100	Severity Classification	Slovenia
María CP <sup>(47)</sup>	2016	56	Severity Classification	Spain
Bozhychko <sup>(48)</sup>	2017	233	Severity Classification	Spain
Ellery KM <sup>(49)</sup>	2017	122	Severity Classification / Diagnosis	USA
Sugimoto M <sup>(50)</sup>	2015	663	Severity Classification	USA
Gougol A <sup>(51)</sup>	2017	500	Severity Classification	USA
Vipperla K <sup>(52)</sup>	2017	121	Severity Classification	USA
Vlada AC <sup>(53)</sup>	2013	67	Severity Classification	USA
Buxbaum J <sup>(54)</sup>	2014	25	Severity Classification	USA
Buxbaum J <sup>(55)</sup>	2016	60	Severity Classification	USA
Dimagno M <sup>(56)</sup>	2014	223	Diagnosis	USA
Bishu S <sup>(57)</sup>	2018	357	Severity Classification	USA
Bem MD <sup>(58)</sup>	2016	175	Severity Classification	USA
Nieminen A <sup>(59)</sup>	2014	25	Diagnosis	Finland
Nikkola A <sup>(60)</sup>	2017	35	Severity Classification	Finland
Nukarinen E <sup>(61)</sup>	2016	176	Severity Classification	Finland
Bakker OJ <sup>(62)</sup>	2013	639	Severity Classification	Netherlands
Párniczky A <sup>(63)</sup>	2015	-*	Severity Classification	Hungary
Poropat G <sup>(64)</sup>	2012	162	Severity Classification / Complications	India
John BJ <sup>(65)</sup>	2017	134	Severity Classification	India
Stirling AD <sup>(66)</sup>	2017	337	Severity Classification	Ireland
Losurdo G <sup>(67)</sup>	2016	90	Severity Classification	Italy
Sugawara S <sup>(68)</sup>	2017	23	Severity Classification	Japan
Andrius K <sup>(69)</sup>	2016	142	Severity Classification / Diagnosis	Lithuania
Chacó MA <sup>(70)</sup>	2017	27	Severity Classification	Mexico
Riquelme F <sup>(71)</sup>	2016	137	Severity Classification / Diagnosis	Mexico
Jesus E <sup>(72)</sup>	2017	198	Severity Classification	Mexico
Głuszek S <sup>(73)</sup>	2015	10	Severity Classification	Poland
Michal I <sup>(74)</sup>	2015	103	Severity Classification / Diagnosis	Poland
Ku nierz C <sup>(75)</sup>	2017	66	Diagnosis	Poland
Sporek M <sup>(76)</sup>	2016	65	Diagnosis	Poland
Huggett MT <sup>(77)</sup>	2015	19	Severity Classification / Pancreatic Necrosis	United Kingdom
Suppiah A <sup>(78)</sup>	2013	146	Severity Classification	United Kingdom
Haffar S <sup>(79)</sup>	2017	54	Severity Classification / Diagnosis	Syria
Bertilsson S <sup>(80)</sup>	2015	1457	Severity Classification	Sweden
Ragnarsson <sup>(81)</sup>	2016	254	Severity Classification	Sweden
Shen HN <sup>(82)</sup>	2012	1.131.927	Severity Classification	Taiwan
Ince AT <sup>(83)</sup>	2014	84	Severity Classification	Turkey
Madaria E <sup>(84)</sup>	2016	40	Pancreatic Necrosis / Complications	Turkey
Senturk H <sup>(85)</sup>	2015	68	Diagnosis	Turkey
Fidan S <sup>(86)</sup>	2018	76	Severity Classification	Turkey
Türkoğlu A <sup>(87)</sup>	2014	92	Severity Classification	Turkey

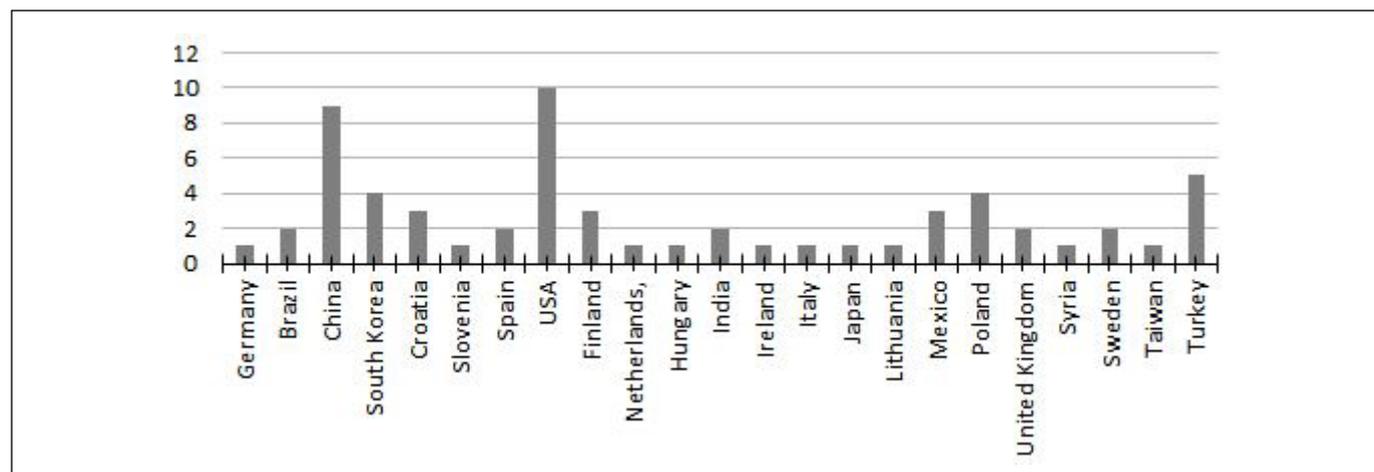
\* Multicenter study in progress, expected sample larger than 1,200 patients.

**TABLE 2.** List of studies that compared the efficiency of prognostic markers (chemical / biological / clinical parameter) and of old rating scores to the new concepts used to determine the severity of patients, which were disclosed after the Atlanta classification revision.

Author	Publication year	Number of participants	Adopted Atlanta Revision Criteria	Nationality
Koziel D <sup>(88)</sup>	2015	822	Severity Classification	Canada
Liu J <sup>(89)</sup>	2016	214	Severity Classification	China
Guo Q <sup>(6)</sup>	2015	973	Severity Classification	China
Chen Y <sup>(7)</sup>	2015	395	Severity Classification	China
He WH <sup>(90)</sup>	2017	708	Severity Classification	China
Zhang J <sup>(91)</sup>	2014	155	Severity Classification	China
Xiao Don <sup>(92)</sup>	2015	573	Severity Classification / Pancreatic Necrosis	China
Yang Z <sup>(93)</sup>	2015	1308	Severity Classification	China
Lee KJ <sup>(94)</sup>	2016	146	Severity Classification	South Korea
Zubia OF <sup>(95)</sup>	2016	374	Severity Classification	Spain
Acevedo N <sup>(96)</sup>	2014	459	Severity Classification	Spain
Kadiyala V <sup>(8)</sup>	2016	338	Severity Classification	USA
Nawaz H <sup>(97)</sup>	2013	256	Severity Classification	USA
Jones MJ <sup>(98)</sup>	2017	629	Severity Classification	United Kingdom
Bansal SS <sup>(9)</sup>	2016	228	Severity Classification	United Kingdom
Ikeura T <sup>(99)</sup>	2016	1159	Severity Classification	Japan
Gravito S <sup>(100)</sup>	2018	312	Severity Classification / Diagnosis	Portugal

**TABLE 3.** Studies that just evaluated and validated the recommendations and concepts presented after the Atlanta Classification revision.

Author	Publication year	Number of participants	Adopted Atlanta Revision Criteria	Nationality
Chen C <sup>(101)</sup>	2017	208	Imaging examinations / Severity Classification	China
Huang J <sup>(102)</sup>	2016	3212	Severity Classification	China
Choi JH <sup>(103)</sup>	2014	553	Severity Classification / Pancreatic Necrosis	South Korea
Kim EJ <sup>(104)</sup>	2017	258	Severity Classification	South Korea
Bouwense SA <sup>(105)</sup>	2017	55	Imaging examinations / Severity Classification	Netherlands
Talukdar R <sup>(106)</sup>	2014	163	Severity Classification	India
Thandassery RB <sup>(107)</sup>	2013	151	Severity Classification	India
Povilas I <sup>(108)</sup>	2017	103	Severity Classification	Lithuania
Lakhey PJ <sup>(109)</sup>	2013	172	Severity Classification	Nepal
Gluszek S <sup>(110)</sup>	2012	1044	Severity Classification	Poland
Fernandes SR <sup>(11)</sup>	2016	525	Severity Classification	Portugal



**FIGURE 2.** Studies that applied the recommendations of the Classification after the Atlanta revision, according to publication country.

recorded the most significant contributions in this group of studies, helping to enhance the knowledge about different prognostic markers and rating scores (especially the Determinant-Based Classification). Nevertheless, they did not classify the investigated patients to assess their prognosis based on the recommendations published after the Atlanta Classification revision, fact that enabled seeing a misalignment in the application of these recommendations in clinical practices.

Interestingly, the evaluation of studies aimed at just validating the recommendations issued after the Atlanta classification revision did not show any US publication, which may suggest that this country may have already incorporated the new recommendations in clinical practices associated with the management of acute pancreatitis<sup>(58,59)</sup>.

In addition, the intention to only classify the severity of patients (90.2% = 55/61) and, to a lesser extent, to use other concepts such as the diagnostic criteria (19.7% = 12/61) and the new definition of pancreatic necrosis (4.9% = 3/61) has prevailed even among publications that had already acknowledged the new recommendations published after the Atlanta Classification revision. However, it is worth taking into consideration and clarifying that the truth about the real application of the new concepts and recommendations released after the Atlanta Classification revision in clinical practices deserves further investigation.

Furthermore, besides the similarity methods used to classify the severity of their patients, the greatest number of studies that the main objective was supposed to compare the Determinant-Based Classification with Atlanta revised Classification still devalue the persistent organ failure as the main criteria to considerate the worsts prognosis of the patients with acute pancreatitis<sup>(5-11)</sup>. Because, even those with infected necrosis, when weren't simultaneously affected for some persistent organ failure, had more expectation to survive, a fact which proves that infected necrosis alone isn't formal indication for open necrosectomy. So, it's necessary a more systematic approach, in a proper time and initiated by minimally invasive procedures as imaging guided percutaneous drainage and endoscopic techniques, until be necessary more invasive measures (video laparoscopy or even laparotomy), mainly if a more significant number of organs has failure and there isn't clinical improvement signals<sup>(92)</sup>. In fact, the revised Atlanta Classification consider the exacerbation of comorbidities and the presence of other different local complications than pancreatic and/or peripancreatic necrosis (as acute liquid collection and pseudocysts) significant criteria to classify patients as moderately severe (instead of only mild, as it would be in the Determinant-Based Criteria if the patient wasn't with organ failure). Moreover, the Atlanta Classification identifies organ failure in a simple form (based on the modified Marshall Classification), establishing a more accurate classification of the patients with acute pancreatitis than the DBC, which leads to a more suitable method to select patients, specific for those who are included in medical researches<sup>(5-11)</sup>.

It is essential mentioning that few published studies, which adopted a different design from the randomized clinical trial,

addressed the application of recommendations published after the Atlanta Classification revision in clinical practices. Among them, it is necessary highlighting the study by Staubli et al., who interviewed 233 physicians, who were heads of surgical or internal departments of 85 hospitals (public and private) in Switzerland, based on an online questionnaire, or on telephone conversations, about the management of patients with acute pancreatitis<sup>(111)</sup>. The aforementioned study has shown that most physicians assessed the severity of patients with acute pancreatitis based on Ranson (87%) or APACHE II (23%) scores; few of them used the classification established and disclosed after the Atlanta revision (12%)<sup>(111)</sup>. Assumably, the scenario presented in the study published in 2017 by Staubli et al. reinforces the current lack of theoretical knowledge by medical professionals on the subject, as well as a possible outdated teaching process currently in progress in medical schools<sup>(111)</sup>.

## CONCLUSION

Unfortunately, changes in the management of patients with acute pancreatitis may need to be taken into consideration, from the teaching process of future physicians to the updating the professionals who are currently dealing with these patients. This assumption is reinforced by the limited number of countries that reported to have started to incorporate the recommendations released after the Atlanta Classification revision in their clinical practice. This is a worrisome situation, since the incorporation of these recommendations, mainly of those associated with the new proposal to classify the severity of patients with acute pancreatitis could considerably facilitate the communication between health professionals, as well as have a directly association with the hospitalization time, mortality rates, ICU admission, need of interventions, nutritional support and longer hospital stay, mainly of patients facing the most severe conditions<sup>(11)</sup>. Finally, the disclosure of the current systematic review could encourage the outspread of the new recommendations in order to enable a larger number of nations to perceive, as soon as possible, the importance of updating and changing the herein presented scenario.

## Authors' contribution

Alves JR: study concept and design; analysis and interpretation of data; drafting of the manuscript; critical revision of the manuscript for important intellectual content; statistical analysis; study supervision. Ferrazza GH: acquisition of data; analysis and interpretation of data; drafting of the manuscript. Nunes Junior IN: acquisition of data; analysis and interpretation of data. Teive MB: critical revision of the manuscript for important intellectual content.

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**RESUMO – Contexto** – Após a revisão da Classificação de Atlanta, em 2012, foram estabelecidas novas recomendações no manejo dos pacientes com pancreatite aguda. **Objetivo** – Objetiva-se avaliar o grau de aceitação e implementação dessas recomendações na prática clínica. **Métodos** – Foi realizada revisão sistemática da literatura com auxílio das bases: PubMed/Medline, Cochrane e SciELO, por meio de busca de estudos em humanos, publicados em inglês e português, no período de 25/10/2012 até 30/11/2018, utilizando os descritores e operador *booleano*: “Acute pancreatitis” E “Atlanta”. Foram incluídos apenas estudos do tipo Ensaios Clínicos Randomizados que avaliaram alguma recomendação relacionada a revisão da Classificação de Atlanta após 2012. **Resultados** – Foram selecionados 89 estudos após aplicação dos critérios de inclusão, exclusão e avaliação qualitativa. Esses foram estratificados quanto à aplicação ou não das recomendações propostas após a revisão da Classificação de Atlanta. Verificou-se que 68,5% dos estudos aplicaram essas recomendações, principalmente, na classificação da gravidade dos pacientes (leve, moderadamente grave, grave). Desses 16,4% eram estudos de origem norte-americana e 14,7% chineses. Os outros 31,5% limitaram-se a comparar ou apenas validar essa classificação de gravidade. **Conclusão** – Poucos estudos divulgaram alguma forma de implementação das novas recomendações, apesar dos esforços norte-americanos e chineses. A falta da aparente incorporação dessas recomendações na prática clínica, não permitiu o aproveitamento de suas vantagens (principalmente a melhora da comunicação entre os profissionais e estabelecimento da classificação e identificação precoce dos pacientes mais graves), sendo necessário toda a comunidade médica internacional se mobilizar de alguma forma para mudar esse cenário.

**DESCRITORES** – Pancreatite. Classificação. Índice de gravidade de doença. Prognóstico.

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