

Need for criteria for the diagnosis and severity assessment of acute cholangitis and cholecystitis: Tokyo Guidelines

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Abstract

The Tokyo Guidelines formulate clinical guidance for health-care providers regarding the diagnosis, severity assessment, and treatment of acute cholangitis and acute cholecystitis. The Guidelines were developed through a comprehensive literature search and selection of evidence. Recommendations were based on the strength and quality of evidence. Expert consensus opinion was used to enhance or formulate important areas where data were insufficient. A working group, composed of gastroenterologists and surgeons with expertise in biliary tract surgery, supplemented with physicians in critical care medicine, epidemiology, and laboratory medicine, was selected to formulate draft guidelines. Several other groups (including members of the Japanese Society for Abdominal Emergency Medicine, the Japan Biliary Association, and the Japanese Society of Hepato-Biliary-Pancreatic Surgery) have reviewed and revised the draft guidelines. To build a global consensus on the management of acute biliary infection, an international expert panel, representing experts in this area, was established. Between April 1 and 2, 2006, an International Consensus Meeting on acute biliary infections was held in Tokyo. A consensus was determined based on best available scientific evidence and discussion by the panel of experts. This report

describes the highlights of the Tokyo International Consensus Meeting in 2006. Some important areas focused on at the meeting include proposals for internationally accepted diagnostic criteria and severity assessment for both clinical and research purposes.

Key words Evidence-based medicine · Practice guidelines · Acute cholecystitis · Acute cholangitis

Introduction

More than 100 years have elapsed since Charcot's triad was first proposed as the characteristic findings of acute cholangitis,¹ and Murphy's sign was proposed as a diagnostic method for acute cholecystitis.² During this period, many new technologies have been developed for the management of acute biliary infections. Antimicrobial therapy, endoscopic techniques for both diagnosis and treatment, minimally invasive operations, including laparoscopic surgery and mini-laparotomy, and fast-track surgery³ are good examples of such advances. Despite the great advances in medicine, acute cholangitis and acute cholecystitis are still great health problems in both developed and developing countries. According to

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epidemiological studies, about 5%–15% of people in developed countries have gallstones,^{4–9} and annually, 1% to 3% of these people develop severe gallstone diseases, including acute cholangitis and acute cholecystitis.¹⁰ Although mortality related to these diseases is relatively rare, they lay a heavy burden on the public, because gallstones are so common and hospitalization is expensive. According to Kim et al.,¹¹ the total direct costs for gallbladder diseases per year in the United States are estimated to be \$5.8 billion. Many clinical studies have been conducted to assess the risk of the disease, the accuracy of diagnostic techniques, and the effectiveness of the treatments. However, the accumulation and integration of such scientific knowledge for application to clinical practice lags behind the progress achieved in medical and surgical technology.¹² For example, many studies have suggested that there are wide variations in the care of acute biliary infections in every part of the world.^{13,14} If there were “a best treatment”, such variation might imply low quality of care.

In order to develop the best possible practice patterns by integrating clinical experience with the best available research information, the Committee on the Development of Guidelines for the Management of Acute Biliary Infection (principal investigator, Tadahiro Takada) (hereafter, the Committee) prepared a draft of “Evidence-based clinical practice guidelines for the management of acute cholangitis and cholecystitis”. The major objectives in developing the guidelines were: (1) to propose standardized diagnostic criteria and severity assessment for both acute cholangitis and acute cholecystitis; and (2) to propose the best strategies for the management of acute biliary infections. The Committee selected a multidisciplinary Working Group composed of experts in hepatobiliary surgery, gastroenterology, intensive care, laboratory medicine, epidemiology, and pediatrics.

Through discussions within the Working Group and between the members of the scientific societies relevant to clinical practice in acute biliary infections, the draft was finalized. Subsequently, in April 2006, an international meeting was held in Tokyo to build global consensus on the management of acute biliary infection; the international consensus panel was composed of leaders in hepatobiliary medicine from across the world. In this article, we describe the methodology and process of developing of the guidelines, and the basic principles and strategies we used to reach global consensus.

Need for standardized diagnostic criteria and severity assessment

In the Guidelines, we (the Working Group) propose uniform criteria for the diagnostic criteria and severity assessment of acute cholangitis and cholecystitis. In the process of developing the Guidelines, the Committee members considered that uniform diagnostic criteria for acute biliary infections were necessary for both research and clinical purposes. Because more than a dozen different local diagnostic criteria are now in use, comparison of treatment effectiveness between studies and comparisons of clinical outcomes across institutions are often difficult. For example, although Charcot’s triad (abdominal pain, fever, and jaundice) has been historically used as the diagnostic criterion of acute cholangitis, no more than 70% of patients with acute cholangitis have the triad.^{15,16} The reported mortality rates of acute cholangitis have a wide range (3.9%–65%), probably due to the lack of standardized criteria. Murphy’s sign has often been used in the diagnosis of acute cholecystitis. This sign is only useful when other physical findings are equivocal, as in mild cholecystitis, and it has a sensitivity and specificity of only 65% and 87%.

Management of acute biliary infections according to severity grade is also critical, because the urgency of treatment and patient outcomes differ according to the severity of the disease. A literature review revealed that terminologies used to define severe cases often failed to distinguish such cases from others. For example, Reynolds’ pentad,¹⁷ which consists of Charcot’s triad plus “shock” and “decrease in level of consciousness”, has been used historically to define severe acute cholangitis. The incidence of the pentad is extremely low, and is less than 10% even in severe cases.¹⁵ There is no doubt that better criteria, which enable physicians to provide appropriate care according to the severity of the disease, are necessary.

Proposals for the diagnostic criteria were developed by beginning with existing definitions and concepts of acute biliary infections. The working group first examined how historical writings and prestigious textbooks have defined acute cholangitis and cholecystitis, and tried to propose criteria to comply with these definitions. We gave priority to the easy and early diagnosis of acute cholangitis by using noninvasive examinations. We also endeavored to incorporate the results of the latest clinical research in the diagnostic and severity assessment criteria.

By a systematic search through the literature and textbooks, the working group discussed the definitions of acute cholangitis and cholecystitis. The basic concepts of the criteria for acute cholangitis include: (1) Charcot’s triad as the definite criteria for the diagnosis of acute cholangitis, and (2) the presence of “biliary infec-

tion” and “bile duct obstruction” proven by laboratory examinations and imaging. “Severe acute cholangitis” was defined as cholangitis with organ failure and/or sepsis. “Acute cholecystitis” was defined as the presentation of clinical signs such as epigastric pain, tenderness, muscle guarding, a palpable mass, Murphy’s sign, and inflammatory signs. “Severe acute cholecystitis” was defined as acute cholecystitis with organ dysfunction.

Process of developing the Guidelines

We planned to use an evidence-based approach to develop our guidelines. We used established criteria and systematic methods for reviewing evidence of clinical effectiveness. However, using only evidence-based data, we were unable to establish a useful set of guidelines.¹⁸ From the literature review, the Working Group found that, for some topics in the management of acute biliary infections, few studies could be classified at high levels of evidence, and that treatment strategies for specific health conditions sometimes differed widely by region and country. There was a concern that such lack of evidence would not produce any recommendations that would be helpful to clinicians who encountered patients with acute biliary infections. As in other areas of medicine, we recognized that, if the authors of the Tokyo Guidelines insisted upon strict adherence to an approach which accepted only studies rated at a high level of evidence in order to formulate guidelines, the vast majority of medical practice would be excluded from the practice guidelines. Therefore, to develop the Guidelines, we shifted our approach to one which combined the best of the literature studies with the best clinical opinion, based on a formal consensus approach. This strategy has the dual advantage of allowing the formulation of the best guidelines possible at the present time, while pointing out areas in which studies are needed in order to formulate future guidelines based solely upon high levels of evidence.

Between April 1 and 2, 2006, an International Consensus Meeting on Acute Biliary Infections was held in Tokyo, in which an expert panel consisting of 30 overseas panelists and 30 Japanese panelists tried to reach consensus on recommendations at a structured 2-day conference. The expert panel was provided with the draft of the guidelines prepared by the Working Group that reviewed the existing scientific evidence for a procedure, as well as providing a list of indications for performing the procedure. In principle, the recommendations were based on the best available evidence. However, in the absence of high-quality evidence, expert consensus was integral to developing the Guidelines. The Guidelines are based on evidence, on discussion by the experts, and on consensus reached by voting. The panel

recognized that specific patient care decisions may be at variance with these guidelines and that these decisions are the prerogative of the patient and of the health professionals providing care.

The Guidelines are intended not only for specialists engaged in the diagnosis and treatment of acute biliary diseases but also for the general practitioner who has first contact with these patients. The Guidelines were prepared to provide medical workers who play an active part at the front line with the best medical practice employing currently available data for the best outcome of the latest clinical research. The Guidelines consist of “clinical questions” that clinicians have in their daily medical practice, and responses to them. For a better understanding of the Guidelines, the sequences of diagnosis and treatment are explained with flowcharts. It is our goal for the Guidelines to help users to provide best medical practice according to their specialty and capability, and thereby to improve the management of acute biliary infection.

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