The trauma and acute care surgeon in the COVID-19 pandemic era

O cirurgião de trauma e emergência na era da pandemia de COVID-19

INTRODUCTION

The World Health Organization recognized in March 2020 the existence of a pandemic for the new coronavirus that appeared in China in late 2019, and whose disease was named COVID-19. In this context, the SBAIT (Brazilian Society of Integrated Care for Traumatized Patients) conducted a survey with 219 trauma and emergency surgeons regarding the availability of personal protective equipment (PPE) and the role of the surgeon in this pandemic by means of an electronic survey. It was observed that surgeons have been acting under inadequate conditions, with a lack of basic supplies as well as more specific equipment such as N95 masks and facial shields for the care of potential victims who may be contaminated. The latter increases the risk of contamination of professionals, resulting in potential losses in the working teams. Immediate measures must be taken to guarantee access to safety equipment throughout the country, since all trauma victims and/or patients with emergency surgical conditions must be treated as potential carriers of COVID-19.

Keywords: Pandemics. Coronavirus. Personal Protective Equipment . Coronavirus Infections.

ABSTRACT

The World Health Organization recognized in March 2020 the existence of a pandemic for the new coronavirus that appeared in China in late 2019, and whose disease was named COVID-19. In this context, the SBAIT (Brazilian Society of Integrated Care for Traumatized Patients) conducted a survey with 219 trauma and emergency surgeons regarding the availability of personal protective equipment (PPE) and the role of the surgeon in this pandemic by means of an electronic survey. It was observed that surgeons have been acting under inadequate conditions, with a lack of basic supplies as well as more specific equipment such as N95 masks and facial shields for the care of potential victims who may be contaminated. The latter increases the risk of contamination of professionals, resulting in potential losses in the working teams. Immediate measures must be taken to guarantee access to safety equipment throughout the country, since all trauma victims and/or patients with emergency surgical conditions must be treated as potential carriers of COVID-19.

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METHODS

This is a prospective questionnaire using the SurveyMonkey tool (http://www.surveymonkey.com)4 and distributed electronically (list of emails and WhatsApp groups) to SBAIT members, composed of trauma and acute care surgeons as well as non-members, totaling approximately 1,500 forms sent. The questionnaire consisted of 14 questions, 13 of which were objective and one that the surgeon could write observations relevant to the topic. The questions addressed the kind of facility and region of work, personal safety situation and which kind of PPE were available to handle trauma patients, considering both, patients with and without the diagnosis of COVID-19, and who have potentially surgical diseases. The data obtained were automatically transferred to an Excel file, to be analyzed.

Participation in the questionnaire was voluntary and spontaneous, and all responses were anonymous. This type of survey does not require ethics committee approval.

RESULTS

Of the 1,500 forms sent, 219 responses were obtained (14.6%). The majority of the surgeons come from the South and Southeast regions of Brazil (54.3%) as shown in Figure 1. Of these, 82% work in the emergency room and/or trauma bay, with only a small portion reporting having had contact with known COVID-19 positive patients.

When assessing the type of institution where the professionals work, it was observed that most of them had professional activities in municipal public hospitals (22.8%), public state hospitals (63.9%) or social health organizations (OSS) (17.3%), and it was also noted that more than 50% of the surgeons also work in private hospitals (Figure 2).

Regarding the personal safety of surgeons, in the current COVID-19 pandemic, it can be seen that 15.5% of them answered that they consider themselves safe to work, while 49.7% consider themselves partially safe and 32.4% do not consider themselves safe to provide care for potentially infected patients (Figure 3).

When asked about what type of safety equipment the surgeon used while in the hospital, 115 (52.5%) reported using a conventional surgical mask, with 30% reported not using any type of personal protective device. As for the types of protection used
to care for patients without suspected COVID-19, it was observed that 43.8% of surgeons use conventional surgical masks even in non-suspected cases, and 36.5% of them reported the use of an N95 mask (Figure 5). When asked about the use of PPE for surgical procedures in patients without suspected virus infection, the answers were practically the same as those obtained for the care of victims without clinical suspicion.

Considering that obtaining a definitive airway is part of the day-to-day tasks of this group of professionals, we evaluated the type of material available to perform oral-tracheal intubation, and the majority of surgeons (55.7%) reported having the face shield and fan filter (42%) available. Unfortunately, only a small number of professionals’ report having the video laryngoscope for intubation available (Figure 8).

As for the PPE available for these surgeons to perform an operative procedure, it was observed that less than half of them had protective equipment as recommended by Anvisa (National Health Surveillance Agency) (46.5%). Seventy-nine surgeons (36.1%) report having less than recommended and 14.6% did not know about such recommendations.

Regarding indications and surgical management of an emergency case (traumatic or not), it was observed that 81 surgeons (36.9%) maintain their usual indications and approaches without changes. However, 51.6% of them have performed thoracic CT scan always and/or in selected cases and 7.7% have opted for non-operative treatment whenever possible (Figure 7).

With regards to laparoscopic surgery and the potential risk of spreading the virus through pneumoperitoneum, it was observed that the majority of surgeons (52.9%) are not performing such procedures at the present time, 23.7% have refrained from performing such procedures only in suspected and/or confirmed cases and 16.4% of surgeons have maintained the usual indications (Figure 6).

It this study 63% of surgeons reported having difficulties in obtaining PPE in their hospitals. Finally, 53.4% (116) of surgeons did not know any health professional who has been infected by the virus.
DISCUSSION

It is well known that injuries resulting from trauma represent the main cause of death in the population under 45 years of age worldwide. It is estimated that about 6 million people die each year as a result of such injuries. This number corresponds to about 10% of deaths in the world, killing more than malaria, tuberculosis and HIV combined.

As of April 15, 2020, according to the Coronavirus Resource Center of Johns Hopkins University, more than 2 million people worldwide and more than 30,000 people in Brazil, have been infected with COVID-19, causing the death of more than 140,000 people around the world.

In Brazil today, the vast majority of trauma victims are admitted to public hospitals and OSS, where approximately 62% of surgeons who responded to the current survey carry out their activities. By April 12, 2020 the Brazilian Medical Association (AMB) had received 3,031 complaints about the lack of PPE for patient care. At the present time, both the public and private sector are suffering from the lack of materials and equipment, placing healthcare professionals at risk. Of the 826 institutions consulted by AMB, 95% were experiencing supply problems.

The scarcity of equipment reported to AMB was related to the availability of N95 masks (87%), followed by goggles or face shields (70%) and fluid resistant gowns (66%). The degree of exposure and risk is such that 26% of the respondents reported lack of gloves and 35% of alcohol-based hand sanitizers. Such data corroborate the findings of the present study as shown in Figure 4.

Assistance to trauma victims follows well-established protocols such as Advanced Trauma Life Support®(ATLS), which assumes that professionals who assist such victims must be wearing appropriated PPE, such as face shields, goggles, fluid resistant gowns and gloves, and such recommendations have been made for decades by the American College of Surgeons and its Committee on Trauma. Unfortunately, there are few public and even academic hospitals in Brazil that follow these rules correctly, placing professionals at increased risk of being exposed to personal contamination by body fluids, secretions and more recently to aerosol from the airways of potentially contaminated patients.

ANVISA recently published a technical note that determines that health care professionals who perform procedures less than 1 meter away from suspected or confirmed patients for coronavirus infection should follow the following guidelines: hand hygiene, goggles and/ or face shields, surgical masks, which must be replaced by N95/PFF2 mask when performing aerosol-generating procedures, gloves and fluid resistant gowns.

Unfortunately, the present study shows that among the 219 surgeons who responded to the survey, 32 of them were not even aware of ANVISA’s recommendations, clearly demonstrating that educational actions by medical societies and health authorities, must be optimized in order to make all health care professionals aware of their guidelines and recommendations.

In a recent electronic publication, Machado Jr recommends for all trauma centers that surgeons have ample access to PPE as well as institutional policies for airway management. In the same way, Lima et al, presented recommendations for emergency surgery during the pandemic, pointing out that the use of protective equipment combined with adequate surgical technique and correct surgical planning represent the best way to reduce contamination rates among health professionals.

Finally when the surgeons were asked about the indications for laparoscopic access for emergency surgeries, there was a tendency to avoid or even not use them, in agreement with the current recommendations of several medical societies due to the risk of...
contamination of the team by aerosol emission from pneumoperitoneum\textsuperscript{[15,16]}. The lack of protective equipment has been affecting surgeons around the world. In the present study, we can say that more than 80\% of surgeons report feeling partially or totally unsafe for care. In the UK, Rimmer reports that a third of surgeons (32.5\% of a total of 1978 responses) pointed to problems with the supply of protective equipment in their hospitals. More than half of the surveyed surgeons claimed to have had problems to have PPE supplies in their hospitals throughout the last 30 days\textsuperscript{17}.

Unfortunately, we can expect casualties to increase among the workforce in hospitals, due to both the contamination of surgeons working in the front lines as well as due to the stress resulting from the daily exposure to cases not only of trauma but also of those infected with COVID-19. Lai et al presented the psychological effects among 1257 health professionals who worked in Wuhan during the peak of the pandemic and identified high rates of depression (50.4\%), anxiety (44.6\%), insomnia (34\%) and stress (71.5\%) among respondents\textsuperscript{18}.

The current pandemic was unexpected and unimaginable for many until 3 months ago. Nonetheless, it has exposed several weaknesses in the healthcare systems around the world, which were not prepared for such an event. Alerts by scientific\textsuperscript{19} and non-scientific\textsuperscript{20} communities have been made in the last decade, but to no avail.

The concern about the loss of contaminated health professionals who will be temporarily out of action and some who will not survive is a huge burden for the society and health systems. The protection of these professionals must be a priority at this time, as well as making information available to everyone.

This study has limitations, which, despite being national in scope, did not reach all states and medical services equally. In addition, the proportion of responses may not be of statistical power to support it since the response rate was only 14.6\%. Despite this limitation, it was considered a priority due to the need for a rapid assessment of the situation in the country, and for recommendations to be proposed in a timely manner. Importantly, this is the first survey conducted in Brazil with this focus during the current pandemic.

SBAIT published recommendations for surgeons in its media channels last month, but it is believed that communication should still be expanded. In times of greatest crisis, the communication process becomes essential for us to protect more lives\textsuperscript{21}.

In conclusion, the trauma and acute care surgeons are in a situation of fragility and risk during the current pandemic, attending traumatized and critical ill patients in most cases without the proper PPE, exposing themselves to contamination. The dissemination of information that can protect surgeons is key in this moment of crisis throughout the health system in Brazil and the world.

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