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Application of "Taihe Model" in the management of critically ill patients with new coronavirus pneumonia

Shiyan Taiyan Hospital is a large comprehensive tertiary first-class hospital , 90% of the clinical medical technology departments in the whole hospital are provincial key specialties. Taihe Hospital has been committed to the construction of diagnosis and treatment centers for difficult and critical diseases since 2012. It owns mature ECMO emergency and critical care teams and strong medical technology departments. It has formed a set of "Taihe model" for the treatment of critically ill patients including efficient organization, multi-disciplinary collaboration, advanced technology and sophisticated management. Every year the critically ill patients account for about 20% of the entire hospital, and the cure rate reaches more than 90%.

In the period of the epidemic of new coronavirus pneumonia, Taihe Hospital gave full play to the "Taihe model" for the treatment

of critically ill patients, and achieved great success in the treatment of critically ill patients with new coronavirus pneumonia. A total of 14 critically ill patients with new coronavirus pneumonia were treated, and 10 cases were cured. The cure rate is much higher than the current reported standards. Among them, 2 patients were treated with ECMO, 4 patients were treated with ventilator, and 3 patients were treated with surgery. At the same time, modern diagnosis and treatment techniques are applied, including stem cell therapy, plasma transfusion of recoverers, and Chinese herbal medicine for one person. The summary experience is as follows:

Firstly, efficient organization

The hospital set up a new coronavirus pneumonia prevention and control team as the epidemic began. The prevention and control leading group established office in the medical department. At the same time, setting up 4 teams, including medical treatment team, prevention and control work team, logistics support team, and propaganda and reporting team. The hospital's leader was charge of each team as a team leader and clarified the responsibilities of each team. The president of the hospital convenes a discussion meeting at a fixed time every afternoon, and participants include four teams' leaders, focusing on reporting the patient's situation in the hospital the day before, protective supplies, drug storage, and hospital prevention and control. Hearing the work done by each team, the problems that need to be resolved ,and make arrangements, study

and solve the problems in rescue work, and clear the thing of the day. Special meetings are held at any time for special events in order to unify management of personnel and unify deployment of materials , so we can achieve efficient operation of rescue work.

Secondly, Multi-disciplinary collaboration

For the new coronavirus pneumonia, the hospital has optimized the multi-disciplinary collaborative diagnosis and treatment mechanism based on the past. Case discussions of patients with new coronary pneumonia will be held respectively at 8:30 am and 16:00 pm on time every day at the medical office. The conference room can view the patient's various examinations and medical records through the electronic system, and can view the patient's dynamics through video. The president of the hospital personally participated and presided over the meeting. The participating members included new coronavirus pneumonia treatment expert group and multi-department senior title experts, including nutrition, pharmacy, nursing, medical imaging inspection, etc., the specialists were also required to participate, every critical patients with new coronavirus pneumonia has been consulted and discussed one by one. Each expert elaborates on the specific measures for diagnosis and treatment according to their respective specialties, determines a consistent diagnosis and treatment plan, and records the results of the discussion in the medical record. In case of disagreement, the leader of the expert group shall finalize the decision based on the

expert opinion. When critically ill patients involve a specialty, the director of the specialist department is required to review the patient and participate in the discussion. After the discussion is completed, the relevant report form expert group will sign and keep it. At the same time, the management medical group is determined for critically ill patients with new coronavirus pneumonia. The senior professional physician in the department of Respiratory and Critical Care or Infectious Diseases serves as the medical team leader, and each medical group is equipped with multiple professional attending physicians. The formulation of diagnosis and treatment plan for critically ill patients and multidisciplinary collaborative diagnosis and treatment of clinical management have been truly realized.

Thirdly, technology leadership

For the critically ill patients with new coronavirus pneumonia and their specific conditions, and in order to better treat the critically ill patients, the hospital has established eight critically ill patient diagnosis and treatment support groups such as respiratory support group, airway management group, and circulatory function management group. Each diagnosis and treatment support group has a team leader, who is a member of the New Coronavirus Pneumonia Medical Treatment Team, participates in multidisciplinary collaborative discussions on time. The team leader determines and adjusts team expert members, formulates team work responsibilities, and clarifies diagnosis and treatment and operation specifications.

The respiratory support group provides patients with effective and appropriate respiratory support methods, carries out mechanical ventilation, and solves respiratory support problems. The airway management group strengthens airway management, unblocks the airway, reduces airway obstruction, reduces infection, maintains breathing, and conducts bronchoscopy and treatment for patients. The circulatory function management group is responsible for the monitoring, evaluation, and treatment of the circulatory function and internal environment of critically ill patients. The immunological evaluation and immunotherapy group conducts immunotherapy and efficacy evaluation of critically ill patients. The focus is on the rational and effective use of hormone drugs, nutrition and intestines. The microbiological management group selects reasonable nutritional support time, route and treatment plan for critically ill patients. Adjust the intestinal microbes and promote nutrient absorption. The ECMO group implements emergency rescue for patients with various heart and lung failures to gain time for the follow-up treatment of the primary disease. The Chinese medicine treatment group fully utilizes the characteristics of traditional Chinese medicine and uses traditional Chinese medicine to assist the critically ill patients. The intensive care group implemented comprehensive care for critically ill patients.

Literature review and discussion meetings are organized by the Medical Department every week with 1-2 support groups. Follow

the study of national new coronavirus pneumonia diagnosis and treatment norms and the latest research results, and fully combine the patient's condition with experts in the group to discuss and form a unified diagnosis and treatment plan to report in multidisciplinary discussions and quickly apply it to the clinic, in order to make patients get the most advanced treatment methods .

In terms of specific measures, Taihe Hospital conducted stem cell therapy and plasma infusion of recoverers for critically ill patients in accordance with the guidelines for diagnosis and treatment, rationally used hormones in accordance with the norms, and arranged well-known Chinese medical experts to go deep into the ward to dialectically treat critically ill patients, and realize one prescription for one patient.

Fourthly, Fine management

Taihe Hospital has opened a mobile version of the medical record system for each treatment expert, which enables experts to refer to the patient's condition, critical value and test results in real time through the mobile phone. The medical service department arranges a special person to conduct a systematic review and real-time monitoring of the condition of critical patients every day, and form daily records. Discuss during special team consultations, daily monitor the implementation of expert discussion opinions and ensure that the experts' recommendations in the morning are implemented in the afternoon. And Quality and safety supervision

team was set up led by the deputy president in charge, focusing on checking the quality of medical records, the implementation of expert opinions, whether the handover of medical staff is detailed, whether the information feedback is timely, whether the prevention and control are in place, and each of them ensures rectification.

Taihe Hospital implements fine management on each link of the treatment process, including preparation of medical equipment for critical patients, information-based monitoring, automatic reception of test results, and deploy staffing and protection in different areas. And organized a number of departments to carry out process review and reconstruction, improve more than ten procedures for critical patients' consultation, hospitalization, inspection, surgery, transfer, and referral, etc., each process includes personnel transfer, route design, adjustment of protective measures, transfer tools replacement, responsibilities and coordination between doctors and nurses and realize closed-loop management.