

From the Perspective of Bone Tumor: Research on Orthopaedic Surgery Based on Artificial Intelligence Technology and Preventive Medicine Network Model and Analysis of Mathematical Modeling Strategy

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Abstract: The post-operative treatment strategy of ERAS is to carefully adopt different types of catheter application strategies, reduce and deal with the removal of used implant consumables as soon as possible, in order to reduce the occurrence of postoperative complications, deal with stress psychological disorders, and eliminate potential negative emotions in psychology. The research team conducted clinical research in Chifeng University Medical College and relevant affiliated hospitals of Capital Medical University. Based on the research results, an intelligent medical model was proposed, and the deep learning strategy was proposed to verify the mathematical rationality of ERAS. Based on the mathematical model and clinical medical data, the research team conducted research on ERAS concept in orthopedic surgery of elderly patients, and reported and analyzed it.

Keywords: Thoracic Surgery; ERAS Concept; Intelligent Medicine; Mathematical Modeling; Radical Osteotomy; Clinical Medicine; Data Science

1. Research background

The death data related to orthopedic diseases is one of the important sources of biological death of cancer patients in medical statistics. There are two kinds of cytopathological classifications: non traumatic orthopedic diseases and traumatic orthopedic diseases. The treatment regimen includes surgical resection, chemotherapy, immunotherapy and radiotherapy. Qin Yi and others proposed a new strategy for cancer prevention medicine, which has inspired the research team. ^[1] In the application strategy of thoracic surgery, the specific actions in ERAS mainly include the following contents: pacification of patients in neuropsychology, proper management of related body fluid intubation, striving to enable patients to eat independently as soon as possible, allowing patients to carry out early rehabilitation activities in nursing and clinical work, and immediate management of related fluid infusion, etc, The purpose of recording and data processing for patients' pain is to reduce the probability of complications, improve the overall rehabilitation medical cycle of patients related to promotion, and reduce the time for patients to be treated in the hospital. ^[2] The starting point of mathematical modeling is to take the mathematical characteristics of the studied field, deeply analyze the strategic mathematical methods and try to establish an overall calculation method, and finally select the necessary and relevant data for specific data calculation for different application problems to complete the solution. ^[3]

2. Research strategy

Based on the concept of ERAS, a psychological model is proposed. The psychological model is used for feature distribution, and the characteristics of data are extracted according to the characteristics of patients. The extracted features

shall be marked with relevant features.

Based on the concept of ERAS, specific strategies are proposed in the process of diagnosis and treatment of orthopaedic surgery and inpatient nursing, and relevant data are arranged mathematically according to specific strategies to form necessary texts.

We try to use the data fitting and data depth learning toolbox of artificial neural network in the clinical medical workstation, and constantly update the algorithm in the clinical medical workstation to complete the solution of relevant medical models, and complete the necessary theoretical verification in mathematical calculation.

3. Research methods

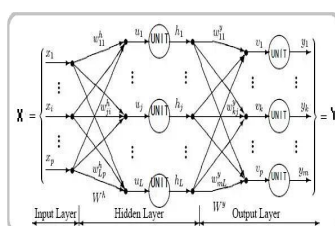


Figure1 neural network

As shown in Figure 1, in the specific research strategy, we distribute the hidden computing layer of the artificial neural network as follows. During network computing, four functional layers are set. The functional layer processes the cleaned data for in-depth learning. During in-depth learning, the target of each functional layer is: A. Replenishment volume B. The number of cannulas is C. Intubation time D. Psychological condition. The rudiment of our algorithm is based on the text input at the input end, but the necessary mathematical strategy for specific deepening and refinement should be based on the specific situation of clinical work. Of course, all kinds of situations need to be coded in advance to continue in-depth algorithm research. This is our medical intelligence model.

The research team tried to propose a theoretical mathematical calculation equation, which is as follows: A Number of catheters B. Intubation time C. Hospitalization days D. Average daily fluid infusion volume, R is the patient's active score.

$$Mm \times A + NN \times B + SS \times C + RR \times D = Gg \times R$$

$$Kk \times A + iu \times B + cs \times C + yy \times D = trq \times R$$

$$VFT \times A + CGT \times B + 087G \times C + 9875RT \times D = CKIUY \times R$$

The matrix is:

$$\begin{bmatrix} Mm & NN & SS & RR & Gg \\ Kk & iu & cs & yy & trq \\ VFT & CGT & 087G & 9875RT & CKIUY \end{bmatrix}$$

Figure 2: Calculation method of matrix

The research team put forward this equation, hoping to complete the optimal data strategy configuration method in theoretical calculation. Therefore, the calculation matrix has better effect and lower cost. The process of analyzing the constants in the matrix can be supported by better and better theoretical supporting data. This is also our computational medicine model.

Technical discussion

Adherence to this medical strategy and mathematical statistics are very important, including various data processing

methods, for accurate interpretation of results and comparison with existing data. Statistics are carried out in different data models by using mathematical calculations or measuring wheels. It is very conducive to academic research, including the scheme recommended by the American Thoracic Society and the scheme recommended by the Society of Neurophysical Therapy. In terms of the treatment of thoracic surgery, we can find mutual support with ERAS concept. Mathematical calculation in medicine is the core of solving problems. Although current statistics can explain the advantages of ERAS, clinicians must use standardized procedures, such as mathematical calculations, to accurately track progress and compare with existing data, where mathematical calculations are used for derivation. This technique is very important in all kinds of tumors. [5][6]

Key technology outlook

In medical education and clinical work, the field of emotion in practice is becoming more and more important for students to learn. From different fields, especially in the field of mathematics education, there are more and more researches on this aspect, which reflects this point. Although the results obtained are not large, it shows that emotional methods have a positive effect on reducing dropout and leaving school early. We can look at this from an inclusive perspective. The current activities implemented in the education projects of colleges and universities are based on STEM methods, with the help of different technical resources, and develop mathematical content from an interdisciplinary perspective. Medical robots, medical 3D printing, mathematical applications for learning in medical engineering, GeoGebra and other software have been used. Such projects can also help narrow the digital divide by providing unpopular students with space and time to learn how to use and become familiar with off campus technologies. [7][8][9][10]

Conclusion

In the current research on the application of ERAS concept in the elderly patients' orthopedic disease radical surgery, based on artificial neural network and mathematical matrix solution, more theoretical support in computing science can be obtained in the future. Clinical medicine is an evidence-based science. [11][12] These works are indispensable. The research team plans to make specific algorithm breakthroughs in the future and publish results in SCI indexed papers to communicate with peers around the world.

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