Reviews

Characteristics and Advantages of Traditional Chinese Medicine in the Treatment of Acute Myocardial Infarction

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Objective: To obtain epidemiological data on Traditional Chinese Medicine (TCM) therapeutic status of acute myocardial infarction (AMI) and to determine TCM characteristics and advantages to improve the level of TCM prevention and treatment of AMI.

Methods: Clinical epidemiology methods were used to register and survey the TCM therapeutic status of hospitalized AMI patients. In 2001, the Chinese Association of Integrative Medicine surveyed the therapeutic status of 3308 AMI patients hospitalized in 30 hospitals in Beijing and Shanghai from 2000-2001. The Beijing Collaborative Study Group on Therapeutic Status of Acute Myocardial Infarction (the Study Group) then conducted a 10-year-long register survey on hospitalized AMI patients in Third-grade A-Level TCM hospitals in Beijing. After 2002, the Study Group further surveyed the treatment conditions of AMI-hospitalized patients in 10 Second-grade A-Level TCM hospitals. The therapeutic status in 8 Third-grade A-Level Western medicine hospitals was surveyed in 2001 and 2005 as a control. In 2008, in cooperation with the China Association of Chinese Medicine, the Study Group further performed a survey at 26 Third-grade A-Level TCM hospitals nation-wide. Approximately 5000 cases were investigated to obtain authoritative data on the therapeutic status of AMI patients in TCM hospitals in China.

Results: We found that Chinese herbal intravenous preparations may be beneficial in reducing the mortality of AMI. Major complications of AMI, such as heart failure and arrhythmia, were significantly less during the 10-year survey period. The mortality of hospitalized AMI patients showed a decline. TCM treatment was helpful for AMI patients in improving their quality of life. Ten-year dynamic monitoring showed that the ability to perform reperfusion and to use drugs appropriately, as well as an effort to carry out the Clinical Guidelines has made great progress in TCM hospitals. However, TCM hospitals still have some problems in treating AMI, including a lack of standardized TCM syndrome diagnosis, the need for syndrome differentiation and treatment standardization, and clinical skills in reperfusion and standardized drug treatment still need to be further improved. Compared with AMI patients in Western medicine hospitals during the same period, those in TCM hospitals had the following characteristics: they were admitted to hospital later; they were older when they had a heart attack; there were more females, they had more problems in their medical history, and they had more concomitant illnesses and complications. Therefore, the demographic baseline data were significantly different between AMI patients in TCM hospitals and those in Western medicine hospitals. This indicated that patients in TCM hospitals were more critical than those in Western medicine hospitals.

Conclusions: TCM has special advantages in treating AMI. TCM hospitals are making continuous progress in standardized treatment of AMI, but further improvement is still required. AMI patients in TCM hospitals have some special characteristics, and their condition may be more critical. Further clinical research on TCM treatment of AMI is required.

Keywords: acute myocardial infarction; Traditional Chinese Medicine; therapeutic status

With the process of aging, cardiovascular diseases have become the leading cause of death. Acute myocardial infarction (AMI) is the most common cardiovascular intensive illness. Although cardiovascular diseases are always the primary topic in the strategy for the development of Chinese medicine, there are insufficient epidemiological data on Chinese medicine treatment of AMI in the past 60 years, and well designed clinical studies on Chinese medicine treatment of AMI are also rare.

From the early 1970s to early 1990s, in-hospital mortality in AMI patients in Beijing gradually decreased from 23.20% to 10.8% 1-3. Surveys in Tianjin, Shanghai and Guangzhou showed that the mortality from AMI is

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During the period of 2000–2001, the Beijing Cardiovascular Diseases, involved 3308 hospitalized patients from 1390 in-hospital intravenous preparations ranked as the third contributor to mortality. Surveys on both 12% and 20%.

Since 2000, several large-scale clinical epidemiological surveys on coronary heart disease have been launched in China, including the Survey on the Treatment Status of AMI (STSAMI), the Global Registry of Acute Coronary Events (GRACE), the Clinical Pathways for Acute Coronary Syndrome in China (CPACS) and Bridging the Gap on CAD Secondary Prevention (BRIG). Each of these studies investigated at least 3000 cases. STSAMI was the only clinical epidemiological study on AMI. STSAMI, which was initiated by the Chinese Association of Integrative Medicine, Committee of Cardiovascular Diseases, involved 3308 hospitalized AMI cases in 30 hospitals in Beijing and Shanghai during the period of 2000–2001. The Beijing Collaborative Study Group on Therapeutic Status of Acute Myocardial Infarction (the Study Group) then conducted a 10-year long register survey on hospitalized AMI patients in Third-grade A-Level TCM hospitals in the Beijing area. After 2002, the Study Group further investigated the treatment conditions of AMI hospitalized patients in 10 Second-grade A-Level TCM hospitals. The therapeutic status in 8 Third-grade A-Level Western medicine hospitals was surveyed in 2001 and 2005 as a control. In 2008, in cooperation with the China Association of Chinese Medicine, the Study Group further carried out a survey at 26 Third-grade A-Level TCM hospitals nation-wide, and approximately 5000 cases were investigated. To date, the Study Group has obtained the most authoritative data on the therapeutic status of AMI patients in TCM hospitals in China. The related survey results will be published gradually. Preliminary survey results showed that TCM has special advantages in treating AMI, and TCM hospitals have made continuous progress in the treatment standardization for AMI, but there are still some problems. It was also found that AMI patients in TCM hospitals have some special characteristics.

**TCM has particular advantages in treating AMI**

Mortality is a strong end point in clinical studies on cardiovascular diseases. Our survey showed that Chinese herbal intravenous preparations may be beneficial in reducing the mortality of AMI. Results from a logistic multiple regression analysis on mortality in 12 TCM or Western medicine hospitals in 2000 showed that TCM intravenous preparations ranked as the third contributor in reducing mortality. Surveys on both 1390 in-hospital AMI patients from 16 Second-grade or Third-grade TCM hospitals in 2002–2005 and 1663 hospitalized AMI patients from 13 Third-grade A-Level TCM hospitals or Western medicine hospitals obtained the same results. Logistics regression analysis on 10-year clinical data and mortality of AMI patients from Third-grade A-Level TCM hospitals in the Beijing area during 1999–2008 also showed that TCM intravenous preparations were effective in lowering the mortality rate of AMI. Statistics data on AMI in Third-grade A-Level TCM Hospitals in Beijing showed that the major complications of AMI, such as heart failure and arrhythmia, were significantly less during these 10 years. The mortality of hospitalized AMI patients showed a decline. A single center clinical study on the treatment of AMI with Danshen (Salvia miltiorrhiza) injectable powder in the Beijing TCM Hospital showed that the total mortality in the treatment group was lower than that in the control group. This suggests that Danshen intravenous preparations might be helpful for the prognosis of AMI patients. Data on 162 AMI patients in Dongfang Hospital of Beijing University of Chinese Medicine was evaluated by multi-factor analysis to determine various factors of mortality. The results showed that both angiotensin converting enzyme inhibitors (ACEI) and TCM herbal soup were protective factors for long-term prognosis of AMI patients. A meta-analysis by our group also showed that TCM intravenous preparations as an adjuvant treatment was useful in reducing AMI mortality. This is similar to the results from a retrospective study in Shanghai in the mid 1990s and a Chinese Cardiac Study (CCS-1).

A preliminary follow-up survey showed that TCM treatment was beneficial to AMI patients for their quality of life. A follow-up study on 115 AMI patients using the World Health Organization Quality of Life BREF (WHOQOL-BREF) showed that the scores of most patients were between neither poor nor good/neither satisfied nor dissatisfied and good in the physiological domain, psychological domain, social relationship domain, and environment domain. The total quality of life scores were good (47%) or not bad (46%). Additionally, the total health assessment scores were satisfied (41%) and not dissatisfied (46%).

**TCM hospitals have made continuous progress in the treatment standardization for AMI**

A survey in 2000 showed that reperfusion was used for 19.6% of AMI patients in Third-grade TCM hospitals in the Beijing area, and thrombolytic therapy was applied for all the reperfusion treatments. By 2005, up to 21.9% of AMI patients in those hospitals used reperfusion therapy, and more than 50% of the cases were treated with interventional therapy. In 2000, no revascularization procedures such as interventional therapy and coronary artery bypass were conducted in TCM hospitals, but by 2005, 21.9% of cases received revascularization treatment. Applications of angiotensin converting enzyme inhibitors (ACEI), beta blockers and lipid lowering drugs, as evidence-based treatments recommended in the Clinical Guidelines for AMI, increased greatly from 58%, 58% and 31% in 2000 to 77%, 66% and 57% in 2005, respectively. Ten-year dynamic monitoring showed that the ability to perform reperfusion and to use drugs appropriately, as well as making an effort to perform the Clinical Guidelines have
made great progress in Third-grade TCM hospitals in the Beijing area. TCM intravenous preparations and decoctions have also been widely used.\(^\text{12}\)

**AMI treatment in TCM hospitals still needs to be improved**

The surveys also showed that TCM hospitals still had some problems in treating AMI, including a lack of standardized TCM syndrome diagnosis, a need for syndrome differentiation, treatment standardization, and clinical skills in reperfusion, and standardized drug treatment still needs to be further improved.

A previous study on the regular pattern of TCM syndromes found that there were 74 types of TCM syndromes in 1124 AMI patients. Only 4 of those syndromes appeared in more than 5% of the total cases. There was no significant relationship between the syndrome pattern and mortality. Therefore, many types of syndromes being diagnosed indicates that there is a lack in standardization of syndrome diagnosis.\(^\text{19}\)

An investigation on what type of treatment was given for a particular syndrome showed that 39% of AMI patients with non-blood stasis syndrome were administrated with TCM preparations that promoted blood circulation and dissolving blood stasis. Additionally, 33% of patients without \(\text{Qi} \) and \(\text{Yin} \) deficiency were prescribed Sheng Mai Yin, an herbal preparation for deficiency of both \(\text{Qi} \) and \(\text{Yin} \). These differences in AMI TCM treatments suggested that the treatment of AMI with various syndromes also needs to be standardized.\(^\text{20}\)

Although there has been some progress in treatment standardization, reperfusion therapy used in TCM hospitals is still less than that in Western medicine hospitals. The use of drugs recommended by the “AMI Guidelines” is still lower in TCM hospitals than that in Western medicine hospitals.\(^\text{8,11,21,22}\)

**AMI patients in TCM hospitals have particular characteristics**

Our survey showed that there was a high in-hospital mortality rate in AMI patients in TCM hospitals in the Beijing area. With continuous improvement in reperfusion skill and standardized treatment, the mortality of AMI has gradually decreased in TCM hospitals. However, there is still a difference between TCM hospitals and Western medicine hospitals. The reason for this result needs to be determined. On the one hand, it suggests that further efforts should be made in TCM hospitals to improve the interventional therapeutic skill and to normalize drug therapy following the Clinical Guidelines. On the other hand, it suggests that more attention should be paid to the independent clinical characteristics of AMI patients in TCM hospitals. Further extensive data analysis will hopefully provide some answers.

Compared with AMI patients in Western medicine hospitals during the same period, those in TCM hospitals had the following characteristics: they were admitted to hospital later; they were older when they had a heart attack; there were more females, there were more problems in their medical history, and they had more concomitant illnesses and complications. This demographic baseline data highlighted the differences between AMI patients in TCM hospitals and in Western medicine hospitals. Consequently, the therapeutic status and prognosis were not the same in the 2 types of hospitals. It is possible that there is a relationship between these characteristics and the relatively high mortality, less reperfusion treatment and fewer applications of some drugs recommended by the “Clinical Guidelines” in TCM hospitals. For example, in 2000 and 2005, the mean age of AMI patients was 61.4 vs 67.6 years old and 62.8 vs 69.1 years old in Third-grade A-Level Western medicine hospitals and their TCM counterpart hospitals in Beijing, respectively. This finding indicated that patients in TCM hospitals were more critical than those in Western medicine hospitals. TCM hospitals have a heavier burden of social health care. More resources and support from the government should be provided to these hospitals.\(^\text{10-12,21-24}\)

Since the end of the last century, the treatment of AMI has focused on reperfusion, and there is a lot more clinical evidence for drug therapy. The “AMI Clinical Guidelines” form the basis for AMI standardized treatment. Mortality from AMI has also shown a gradual decrease. However, AMI is still a critical disease. We urgently need to determine how to reduce in-hospital AMI mortality. TCM treatment should be considered as an important alternative method. The above survey results suggest that Chinese medicine has potential advantages in reducing mortality of AMI. However, AMI patients in Chinese medicine hospitals have some particular characteristics, and they may also have a more critical condition than those in Western hospitals. In addition, TCM hospitals are still not proficient in TCM diagnosis and treatment standardization for AMI. Therefore, to ensure that TCM therapy plays a better role in the treatment of integrative Chinese and Western medicine to reduce AMI mortality, clinical research on TCM AMI treatment should be increased. With further studies, more clinical evidence of TCM in the prevention and treatment of major diseases could also be provided to public health authorities and medical insurance systems.

**REFERENCES**


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