

Exploring the Negative Effect of Tooth Extraction on Cardiovascular Disease for the Elder

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Abstract: Tooth extraction of the elderly with cardiovascular disease, has drawn increasing attention of the public. In order to explore the negative effect of the extraction and reduce the potential risks helpfully, an observation was conducted in the hospital, among the elderly patients with various cardiovascular disease on their reaction towards medical monitoring in the course of the tooth extraction. The study reveals that the potential risk is relative high and the most influential risk is arrhythmia. It may be caused by the weak myocardial function and unstable emotion. Suggestions for improvements are put forward in the conclusion part.

Keywords: negative effect; tooth extraction; cardiovascular disease; the elderly

1. Introduction

A major current situation for modern societies is that the population of the elderly is gradually increasing and more than a half of them have different and complicated cardiovascular disease. Due to various reasons of oral diseases, the elderly may be cured by tooth extraction. It is universally known that extraction is also a operation which can bring risks, such as the risks of increased heart rate and soaring blood pressure. Kaumudi claims that periodontal disease is closely related to coronary heart disease.^[1] In a word, knowing some negative effect of tooth extraction on cardiovascular is necessary.

There are many factors influencing the potential risk of tooth extraction which are time, psychology, anesthetic effect and cardiac function.^[2]

Nowadays, the population of elder is increasing and most of them have different and complicated various cardiovascular diseases. Among these elder people, they maybe have some toothache, besides, the tooth extraction is most commonly used.

In view of the practical need of research, some specialists did an observation on the elder people whose average age was seventy and also suffered from hypertension and cardiopathy. The elder aboved-mentioned underwent the tooth extraction after the dentists confirmed that they were in good conigition. However, cardiac arrhythmia and other heart problems were occurred on nearly half of the patients during the extraction. It can be said with certainty that it is the effect of the age and cardiovascular diseases that the heart function is weakened, so the proportion of the happening of potential risk is higher.

As has been mentioned above, exploring the change of cardiovascular during the extraction is necessary to the research of negative effect.

The purpose of the paper is to explore the negative effect of tooth extraction on cardiovascular disease for the elder and reduce the risks during the operation helpfully. The negative effect is divided into two sides, pshiology and psychology. Then the elderly patients were observed the reaction and condition with continuous ECG (electrocardiogram) and blood pressure monitoring during the extraction. The specialists consider that the main factors of arrhythmia are mental tension, long extraction time and poor anesthesia effect for the elderly. All these stimuluses can make the body under stress and increase the activity of nervous system so that myocardial oxygen consumption rises gradually that could break the balance between the heart and oxygen.^[3]

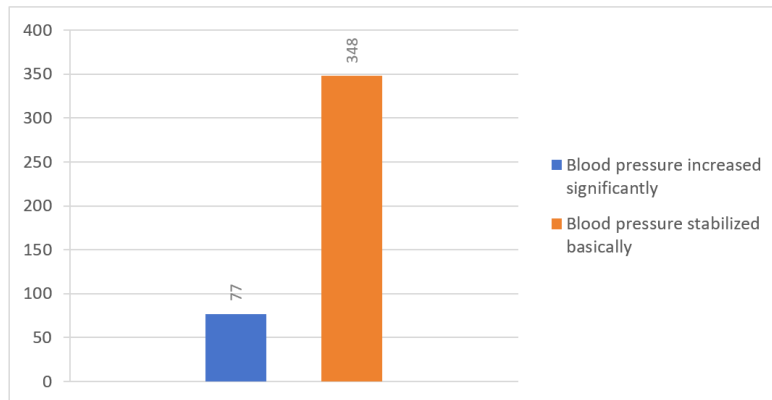
2. Method

To explore the negative effect on the change of physiology during the extraction, 295 elderly patients with cardiovascular disease in which female were 148 who were selected from The Ninth People's Hospital Affiliated to Shanghai Second Medical University in 1994. Among them, the age ranged from 60 to 83 and their health condition is in accordance with the indication of tooth extraction. In 295 cases, 84 cases were coronary heart disease and 114 cases were hypertension. These elderly patients both used continuous ECG and blood pressure monitoring during the extraction. Then, it chose 32 elderly patients to explore the negative effect on the change of psychology and

observed the reactions.^[4]The most important thing for the elderly with chronic cardiovascular disease was fear, such as anaesthetization and the pain of extraction. In order to keep the environment quiet and relax the patients, all the patients were cared by the professional castody and took a semi recumbent position which was beneficial to the cardiovascular circulation.

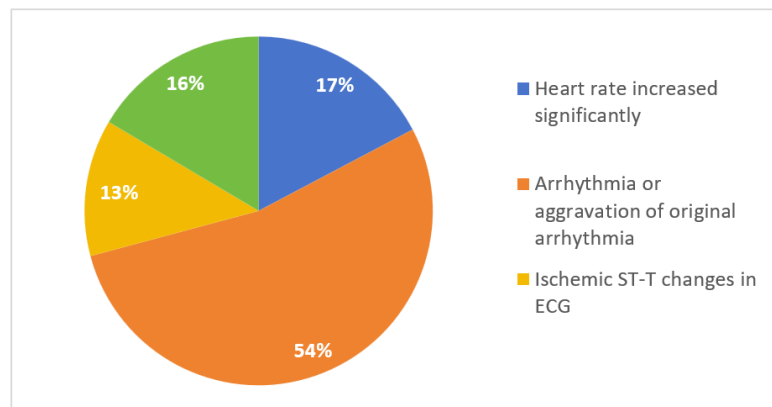
In a large number of experimental data, we selected the following data for further analysis which has typical characteristic results with representative significance.

Table: Comparison of the population of the elderly in the changes of the blood pressure during tooth extraction



(Source: Wang)

Pie chart: Potential risk symptoms of tooth extraction



(Source: Wang)

3. Result

The charts illustrate the potential risks of the main influencing factors of tooth extraction. On the one hand, the bar chart displays the numbers of the elderly with a stable blood pressure. It can easily be seen that the vast majority of persons hold a stable blood pressure under the monitoring in the course of the extraction. On the other hand, the pie chart shows the percentage of the change of cardiovascular system. The proportion of cardiac arrhythmia and aggravation of original arrhythmia takes up more than half of the area and the other three parts basically evenly divided. When coupled with the information of figures, leads to a possible conclusion that the principal negative effect on the change physiology during the extraction is cardiac arrhythmia.

4. Discussion

The purpose of this study is to explore the negative effect of tooth extraction on cardiovascular disease for the elderly and reduce the risks during the operation helpfully. The results imply that cardiac arrhythmia is the main negative effect in physiology and fear is the other effect in psychology.

According to the charts above, the bar chart indicates that most elderly patients do not have a large fluctuation of blood pressure during

tooth extraction because of the contrast between the two figures. The reason why can not cause great fluctuation is the innate depressor reflex of human body, which is a kind of cardiovascular reflex regulated by the nervous system. In this regulation, when arterial blood pressure rises sharply with the reasons of the body, the heart rate will slow down reflexively and the cardiac output will decrease, in addition, the blood vessel will dilate and peripheral resistance will reduce so that the blood pressure will drop finally. In the pie chart, these data suggest that the principal negative effect during the extraction is cardiac arrhythmia. Tooth extraction can cause various arrhythmias which lead to heart disease and hypertension. In most cases, tooth extraction is done under local anaesthesia so that the patients are in a state of consciousness during the operation. As a result, arrhythmias is related to the sympathetic excitation which is caused by tension, fear and incomplete analgesia during tooth extraction.

The findings of this study agree well with some of Wang's analysis, in that cardiac arrhythmia is the major negative effect of the elderly during tooth extraction and there are also other adverse symptoms, such as ischemic electrocardiogram, dizziness, chest tightness, angina pectoris and so on. According to the specialists, even for the elderly patients with cardiovascular disease who meet the indication of tooth extraction, the operation may bring a certain risk. It is essential to include the significant increase of blood pressure and heart rate into the potential risks during the extraction. The reason for this is to consider that at this time, the oxygen consumption in the heart muscle cell climbs sharply, so the heart is overburdened. It is generally accepted that patients with cardiovascular disease may have more complications in the course of the tooth extraction.

Some patients have pain after tooth extraction which is not expected initially. Wu claimed that pain after tooth extraction was often caused by hard tissue trauma, which might be caused by the trauma of instruments to bone tissue during tooth extraction in 2002. If the treatment is not meticulous after the extraction, leaving sharp bone margin on the soft tissue trauma can also cause the other pain. Postoperative pain can lead to increased blood pressure, faster heart rate and aggravation of the original condition.

These results contradict the original hypothesis in some areas because it is surmised that the negative effects may contribute to the positive motivation. The safety of tooth extraction of the elderly patients with cardiovascular disease is deserved attention widely. For instance, it is suggested that many dentists are willing to do more detailed examinations and make a better treatment plan when they conduct preoperative preparations for the elderly patients as well as do more comprehensive intraoperative monitoring in order to avoid risks probably. The main reason why many dentists choose to use the risk scores is that the risk of the complications which may be caused by the older age and increased comorbidities and the risk scores could help the doctors make sure the risk of complications usefully.^[5] A majority of doctors tend to give more humanistic care to the elderly by showing solicitude for the emotional changes of the elderly patients and give psychological guidance in time. In addition, it seems that most elderly patients would pay more attention to their physical condition and do exercises more actively.

5. Conclusion

The finding has important implications for the curing the elderly in tooth extraction. There are several suggestions to reduce the occurrence of potential risks. First of all, it is required to pay attention to the medical history before extraction and do some physical examination and routine ECG monitoring if necessary.^[6] Second, the time of extraction should be shortened properly. The cardiac function of the elderly patients with cardiovascular disease is too weak to bear long-term extraction. In order to solve this problem, it is recommended to operate by skilled dentists, and the number of tooth extraction should not be much each time. Next, doctors ought to pay attention to the psychological changes of the elderly to make them eliminate fear and increase confidence. In addition, the medical staff should communicate with the elderly patients deeply, explain and analyze the condition of the treatment and the situation of anesthesia and extraction in detail as possible as they can, which has a good role in relieving the tension and anxiety of the patients. Forth, patients with cardiovascular disease need effective psychotherapy and dental knowledge so that the patients with cardiovascular disease can relieve tension and ensure the safety of patients before tooth extraction.^[7] Finally, preparing the first aid medicine and equipment is important to deal with emergencies.^[8] The limitations in this study might have problems. It had collected one statistics, there were not multi-dimensional and multi angle data had been collected. Hence the results of the study should be treated with caution. We hope that this paper can inspire more researchers in this field to carry out more detailed and in-depth research in this field. Further research is recommended to analyze the effect of the dose of anesthetics on tooth extraction.

References

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