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Optimum dose of aspirin for patients with heart disease

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Abstract

A 10-year study on a human subject showed that the optimum dose of aspirin to treat coronary heart disease was about 49 mg daily. If the dose was increased to 56 mg, insignificant and reversible hematuria would occur. If the dose was decreased to 40.5 mg, inadequate efficacy would result. No kidney problem was observed as long as the dose did not exceed 56 mg. These findings are a good supplement to the FDA's recent new guidance on how to use this medication safely to prevent stroke and heart attack.

Keywords: Aspirin; Optimum dose; Heart disease; Hematuria

1 Introduction

Aspirin is a popular over-the-counter medicine used for reducing fever and temporary relief of pain. It is also used to prevent blood clogs and reduce the risk of stroke and heart attack. The most common dose of aspirin for cardiovascular patients is 81mg daily [1].Recently, the US Food and Drug Administration (FDA) issued a new guideline for the use of 81mg aspirin in patients with heart disease. They suggested that this therapy should be used only for patients who had previous heart attack and heart surgery. Others should not take it because it may cause internal bleeding and possibly kidney problem [2,3]. This case report discusses the result of a 10-year study on one patient that aspirin can be safely used at a dose of about 49 mg daily without causing bleeding and kidney problem while maintaining efficacy to treat mild coronary heart disease. The author believes that this observation is a good supplement to the FDA's new guidance.

2 Methods

A 52-year-old Asian male subject was diagnosed with coronary heart disease about 10 years ago. His electrocardiogram was abnormal, the radioisotope imaging study showed his heart was partially ischemic, and the echocardiography showed one of his heart valves was partially leaking. As a result, he often experienced chest discomfort. Then his cardiologist put him on a low-dose aspirin regime, and closely monitored his urine for blood and eGFR (estimated glomerular filtration rate) for renal function.

3 Results and discussion

Table 1 summarizes the observations of this study on treating the patient using three different doses of aspirin.

The patient was given a daily dose of 56 mg of aspirin for 117 months, during which he did not experience chest discomfort nor had a heart attack. But a very small amount of blood was observed in his urine. His eGRF reading at the end of the 117 month was 97 which is normal. Subsequently, the dose of aspirin was lowered to 40.5 mg daily, and no

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blood was observed in his urine. But the chest discomfort came back after 1.4 months, which suggests this dose may be sub-therapeutic. And then, the dose of aspirin was raised to 49 mg daily, and the chest discomfort disappeared and no blood was observed in his urine in 2.8 months. At this time point, his eGRF reading was 98 which is normal. These results suggest that the therapeutic window of aspirin for this patient was between 40,5 mg to 56 mg, which is quite narrow. The hematuria side-effect at the 56 mg dose level was reversible in as soon as 1.4 to 4.2 months if the dose was lowered to 40.5 mg to 49 mg.

Table 1 Summary of the study on aspirin doses

Daily Dose of Aspirin (mg)	Duration of Treatment (Months)	Feeling Chest Discomfort?	Presence of Blood in Urine?	eGFR (mL/min/1.73m^2)
56	117	No	Trace amount	97
40.5	1.4	Yes	No	N/A
49	2.8	No	No	98

Note: An eGFR of 60 or higher is in the normal range; an eGFR below 60 may mean kidney disease; an eGFR of 15 or lower may mean kidney failure

When the author travelled to China recently, he learned that the recommended dose of aspirin for Chinese patients by the Chinese State Food and Drug Administration (SFDA) was 50 mg daily. Figure 1 illustrates the pictures of a few Chinese products with their dose specification printed on the labels. This is another indication that a dose of aspirin near 50 mg may work very well at least in the Chinese population.

Figure 1 Pictures of Chinese products of aspirin for patients with heart disease

Aspirin is known to interact with many drugs [4,5]. The study presented in this report has not exhausted all the possibility of drug interaction problems which can complicate the dosing method of this medicine, and this should be evaluated carefully in future studies.

4 Conclusion

A daily dose of aspirin at about 49 mg is found to be safe and efficacious for an Asian patient with heart disease. At this dose level, no bleeding and kidney failure will be an issue.

Compliance with ethical standards

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Disclosure of conflict of interest

The author declares that there is no conflict of interest associated with this work.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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