Commentary

On the unfulfilled public health potential of aspirin

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Received 20 April 2010, accepted 26 April 2010

Aspirin might contribute to public health policy by reducing the risk of vascular events and colorectal cancer. These are significant causes of disease, disability and death in the population and increased aspirin use in the population might be beneficial. In this article, a summary of the contemporary literature is presented and policy developments are suggested.

Aspirin and secondary prevention of vascular events

The benefit of aspirin in the secondary prevention of vascular events is well accepted and the use of the medicine for this indication is an established part of mainstream clinical practice, unless individual patients have specific contraindications. It is of concern, therefore, that there appears to be an under use of aspirin prophylaxis for the indication of secondary prevention, particularly myocardial infarction. Given that aspirin is easily available and inexpensive, factors underpinning the under use of the medicine need to be identified, in order to develop targeted policies to address this matter.

Aspirin and primary prevention of vascular events

This remains a controversial topic and the evidence base has been subject to different interpretations by different authorities. Further trials are ongoing, yet in at least one subgroup, namely men with type 2 diabetes mellitus, there is meta-analysis evidence which is consistent with a clear benefit of aspirin for primary prevention of vascular events. Yet the counterfactual conclusion was reached namely 'a clear benefit of aspirin in the primary prevention of major cardiovascular events in people with diabetes remains unproved'.

Aspirin and primary prevention in men with type 2 diabetes mellitus

The statistically significant relative risk reduction conferred by aspirin against myocardial infarction was calculated at about 40%. Based on the original data (Appendix 1), the number needed to treat (NNT) to avoid one extra myocardial infarction was about 125 with the number needed to harm (NNH), based on questionable assumptions, of 1 in 500. The benefit risk balance has a quantitative ratio that is 4-fold in favour of aspirin. This suggests that advice should be given to diabetic men on this benefit vs. risk balance.

Aspirin taking on age grounds

The underpinning basis for this potential indication is that age is the strongest non-modifiable predictor of vascular event risk. There is a growing evidence base that individuals over the age of 50 years of age could benefit from taking aspirin. Possibly aspirin in future might become part of the mainstream package of interventions that are offered to people over the age of 50, including screening for colorectal cancer. Further epidemiological research on the level of aspirin use in older population would be helpful.

Aspirin and cancer prevention

The possibility that aspirin might reduce the risk of developing cancer was given prominence in 1997 when the International Agency for Research on Cancer evaluated the evidence. The conclusion reached in 1997 was that the evidence was limited but subsequent meta-analyses of randomized controlled trials support the chemopreventive effect of aspirin in reducing the risk of colorectal cancer. Such an effect appears to be dependent on the continuous use of aspirin for over 5 years. The potential of aspirin to enhance colorectal cancer screening programmes has also been suggested.

Conclusion

One of the objections against increased aspirin use is the undesirable effects of the medicine. Such objections, however, may reflect inaccurate perceptions about the risks of aspirin or misinterpretations of the evidence. For example, while accepting that aspirin can increase the risk of bleeding, the evidence suggests that the severity of such events appears to be less serious than bleeds induced by other pathological causes.

Wider aspirin use, which could complement other public health policies, might also include a great role of the medicine in managing the acute phase of a myocardial infarction. This could be another important policy development with aspirin. Furthermore, further health economic research could also be conducted on comparing aspirin with other public health policies.

In conclusion, on current evidence aspirin has an unfulfilled public health potential. Policy and research initiatives to
ensure that the potential of the medicine are fulfilled could be progressed. The roles of aspirin in developing countries and also in the ageing population are further additional dimensions.

Conflicts of interest: None declared.

References


Appendix 1

The original data presented\(^3\) was 103 events occurring in 1552 diabetic men taking aspirin with 162 events in 1574 diabetic men on control or placebo. This can be expressed as an event rate per 1000 diabetics, namely 66 and 103, respectively. This gives a difference of 37 myocardial infarctions, statistically significant, avoided by aspirin per 1000 treated. Given most of the diabetics were in trials lasting about 5 years, perhaps 7–8 myocardial infarctions may be avoided per annum per 1000 treated, an annual NNT of 1 in 125. It was further estimated that two major bleeding complications can be attributed to aspirin in 1000 individuals per annum. On this basis, the annual NNH might be assumed to 1 in 500 and accepting an even more questionable assumption that a major bleed carries the same mortality and long-term consequences as a myocardial infarction, the benefit risk balance of NNT to NNH appears to have a quantitative ratio that is 4-fold in favour of aspirin. The evidence supports a clear benefit vs. risk balance of aspirin for the primary prevention of myocardial infarction in diabetic men.