Fibrinogen-beta (FGB) c.-455G>A polymorphism testing in cardiovascular disease

Record Status
This is a bibliographic record of a published health technology assessment. No evaluation of the quality of this assessment has been made for the HTA database.

Citation

Authors’ conclusions
Cardiovascular disease (CVD) describes the category of diseases caused by atherosclerosis, the accumulation of plaque in the walls of arteries. Atherosclerosis may be present for many years without noticeable symptoms. Plaques impede blood flow as they grow in size; when this occurs in the coronary arteries, it is referred to as coronary artery disease (CAD). CAD is the most common cause of death in developed countries; in 2008, CAD was responsible for one quarter of all deaths in the United States. In addition to atherosclerosis, risk factors for CAD include inherited factors, systemic disorders such as high blood pressure, abnormal cholesterol levels, diabetes, obesity, physical inactivity, and smoking. Myocardial infarction (MI) is a serious complication of CAD that occurs when plaques become dislodged or rupture and the resulting materials combine with clotting factors to block a coronary artery. The blockage prevents oxygen from reaching heart tissue, resulting in damage or dysfunction. Approximately 1.5 million MIs occur in the United States each year. While many individuals survive MI, damage to the affected region of the heart is permanent. As vessel blockages consist of plaque material and clots formed by the body's blood clotting mechanism, known as the coagulation cascade, factors involved in the coagulation cascade are of interest in research concerning causes of MI. A principal component of the coagulation cascade is fibrinogen, which is converted into fibrin to form blood clots in the ultimate step of the cascade. High plasma levels of fibrinogen have been linked to CAD. It is not clear whether high fibrinogen contributes to disease development or is simply a marker of inherent inflammation associated with CAD. Fibrinogen level variation has also been linked to variants in genes that encode the polypeptide chains that comprise fibrinogen. One of these polypeptides, beta (β)-fibrinogen, is encoded by the fibrinogen beta chain (FGB) gene. The c.-455G>A variant in FGB has been linked to elevated plasma levels of fibrinogen. Due to this association, and the relationship between high fibrinogen levels and CAD, the FGB c.-455G>A variant has become of interest due to its potential as a risk factor for CAD. CAD is a complex and multifactorial disorder with a variety of clinical endpoints. In this report, studies utilizing MI as a clinical endpoint were selected for review in order to facilitate comparison of results.

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