ワルファリンに関するgenotypeにより入院が減少する

MM-WES：遺伝子検査により最も有効な抗凝固療法用量が決定でき入院が3分の1近く減少する

MM-WES: Genetic testing helps determine most effective dose for anticoagulant therapy, cutting hospitalizations by nearly one-third

各々の患者に対する最も安全で有効な抗凝固療法用量を医師が決定するのに役立つある簡便な遺伝子検査により、一般的に用量を試したり失敗したりして調整する重要な開始時期の入院数を有意に減少させるとの研究結果が第59回American College of Cardiology学会で発表された。Medco-Mayoワルファリン有効性スタディ（Medco-Mayo Warfarin Effectiveness Study：MM-WES）ではワルファリン療法を開始する患者896人を組み入れた。医師は患者から血液検体または頬粘膜のスワブを採取し、2つの遺伝子（CYP2C9およびVKORC1）の発現に関するレポートおよびこの結果を解釈するための臨床情報を得た。例えば、genotypeに基づきワルファリン感受性が高いと分類された患者の主治医はワルファリン投与量を減量し血液検査をより頻回に行った。6ヵ月後、全ての理由による入院および出血または血栓塞栓症による入院は遺伝子検査を受けた者において遺伝子検査を受けずに従来通りにコントロールされた者と比較し、それぞれ31%および29%少なかった。Genotype決定後の入院のみを対象とした解析では、遺伝子検査をされた患者の全ての原因による入院のリスクは33%低く、出血または血栓塞栓症による入院は43%低かった。

Full Text

A simple genetic test that helps physicians determine for each patient the safest and most effective dose of an anticoagulant significantly reduces the number of hospitalizations during the critical start-up phase when dosing is typically adjusted by trial and error, according to research presented at the American College of Cardiology's 59th annual scientific session.

The Medco-Mayo Warfarin Effectiveness Study (MM-WES) found that hospital admissions for any cause could be cut by nearly one-third, as could hospitalizations for either excess bleeding or unwanted blood clotting simply by testing for variations in two genes that strongly influence a patient's sensitivity to the blood thinner warfarin.

"Genetic testing is a tool clinicians can use to more accurately predict the best warfarin dose early on," said Robert S. Epstein, M.D., chief medical officer and president of the Medco Research Institute in Franklin Lakes, N.J. "Patients may get to a stable dose more quickly and, therefore, have a lower risk of negative outcomes."

Warfarin sensitivity varies widely, however, and it can take weeks or even months of repeated blood tests and dose adjustments to determine the right dose for each patient. During that time, patients are at high risk for either thromboembolism from too little warfarin, or dangerous bleeding from too much warfarin. The MM-WES study is the first national, prospective, comparative effectiveness study to evaluate the role of genetic testing in assisting physicians to gauge the best warfarin dose and monitoring intensity during the early dose-adjustment phase of treatment.

For the study, researchers recruited 896 patients who were beginning warfarin therapy. All study participants were members of a prescription benefits plan managed by Medco Health Solutions. They came from 49 of 50 states and a variety of practice settings.

Shortly after starting warfarin therapy, patients gave a blood sample or a cheek swab, which was analyzed at the Mayo Clinic in Rochester, M.N. For each patient, the ordering physician received a report on the genetic expression of two genes, CYP2C9 and VKORC1, as well as clinical information on how to interpret the findings. For example, a patient might be classified as having a high sensitivity to warfarin based on genotype. In this case, the physician would be advised to reduce the warfarin dose and monitor blood tests more frequently. If a patient were found to have a low sensitivity to warfarin, the report would recommend an increase in warfarin dose. Each physician was free to decide how to respond to the report and what action to take.

The researchers found that, during the first six months of warfarin therapy, patients who had genetic testing were 31 percent less likely to be hospitalized for any cause, when compared to an historical control group that did not undergo genetic testing. Patients in the gene-testing group were also 29 percent less likely to be hospitalized for bleeding or thromboembolism. The study's findings were even stronger when the analysis included only hospitalizations that occurred after genotyping. In this per-protocol analysis, patients who underwent genetic testing had a 33 percent lower risk of all-cause hospitalization and a 43 percent lower risk of hospitalization for bleeding or thromboembolism.

The cost of genetic testing - approximately $250 to $400, depending on the laboratory - is justified by the savings, according to Epstein. "If we reduce just two hospitalizations per 100 patients tested, that more than compensates for the cost of genotyping," he said.

Medco provided funding for genotyping and data collection. Researchers from the Mayo Clinic and Washington University donated their time.

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