Quality-of-Life and Economic Outcomes of Assessing Fractional Flow Reserve With Computed Tomography Angiography: PLATFORM.

Abstract: Fractional flow reserve estimated using computed tomography (FFRCT) might improve evaluation of patients with chest pain. The authors sought to determine the effect on cost and quality of life (QOL) of using FFRCT instead of usual care to evaluate stable patients with symptoms suspicious for coronary disease. Symptomatic patients without known coronary disease were enrolled into 2 strata based on whether invasive or noninvasive diagnostic testing was planned. In each stratum, consecutive observational cohorts were evaluated with either usual care or FFRCT. The number of diagnostic tests, invasive procedures, hospitalizations, and medications during 90-day follow-up were multiplied by U.S. cost weights and summed to derive total medical costs. Changes in QOL from baseline to 90 days were assessed using the Seattle Angina Questionnaire, the EuroQOL, and a visual analog scale. In the 584 patients, 74% had atypical angina, and the pre-test probability of coronary disease was 49%. In the planned invasive stratum, mean costs were
32% lower among the FFRCT patients than among the usual care patients ($7,343 vs. $10,734 p< 0.0001). In the noninvasive stratum, mean costs were not significantly different between the FFRCT patients and the usual care patients ($2,679 vs. $2,137; p = 0.26). In a sensitivity analysis, when the cost weight of FFRCT was set to 7 times that of computed tomography angiography, the FFRCT group still had lower costs than the usual care group in the invasive testing stratum ($8,619 vs. $10,734; p< 0.0001), whereas in the noninvasive testing stratum, when the cost weight of FFRCT was set to one-half that of computed tomography angiography, the FFRCT group had higher costs than the usual care group ($2,766 vs. $2,137; p = 0.02). Each QOL score improved in the overall study population (p< 0.0001). In the noninvasive stratum, QOL scores improved more in FFRCT patients than in usual care patients: Seattle Angina Questionnaire 19.5 versus 11.4, p = 0.003; EuroQOL 0.08 versus 0.03, p = 0.002; and visual analog scale 4.1 versus 2.3, p = 0.82. In the invasive cohort, the improvements in QOL were similar in the FFRCT and usual care patients. An evaluation strategy based on FFRCT was associated with less resource use and lower costs within 90 days than evaluation with invasive coronary angiography. Evaluation with FFRCT was associated with greater improvement in quality of life than evaluation with usual noninvasive testing. (Prospective Longitudinal Trial of FFRCT: Outcomes and Resource Impacts [PLATFORM]; NCT01943903).