The Effects of Improved Serum Screening on Prenatal Invasive Testing

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Abstract

Objective: One goal of new technologies for prenatal screening is to decrease loss of healthy fetuses attributable to invasive testing. Our objective was to determine the impact of new screening technologies on invasive diagnostic testing by chorionic villous sampling (CVS) or amniocentesis.

Methods: Genetics and ultrasound databases were searched for singleton pregnancies undergoing invasive procedures and/or prenatal screening. Rates of CVS and amniocentesis were compared across three cohorts (November-October): T1- 2004-05, immediately prior to first trimester screening; T2- 2010-11, first trimester screening well established; and T3- 2012-13, following implementation of cell-free fetal DNA noninvasive prenatal tests.

Results: Invasive testing decreased significantly by 33% from T1 to T2 and another 46% from T2 to T3. In T1, 136 patients tested; in T2, 94 tested [136/3530 (3.9%) vs. 94/3646 (2.6%), $p = .0002$]. In T3, 51 tested [51/3713 (1.4%), $p < .0001$]. The indications for seeking specific invasive tests were significantly impacted over the three periods of genetic screening: Amniocentesis $p = .027$; CVS $p = .003$. The percent of invasive tests resulting in abnormal karyotype increased ($p = .007$).

Conclusions: Over time, we did less invasive testing of our high risk patients but identified more abnormalities; thus we have put fewer healthy fetuses in our region at risk.

Key Words: Invasive prenatal testing; Noninvasive prenatal screening test; Prenatal genetic screening