

Fetal sex determination: the predictive value of 3 common myths

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Obstetrics is both exciting and rewarding for many family physicians. The rewards lie in the varied challenges it brings — some of the more interesting challenges involve the deceptively simple. For example, the often asked question, “Can you tell if it’s a boy or a girl?” seems quite simple. However...

Many family physicians have been asked time and time again about the accuracy of certain “old wive’s tales” for predicting the sex of the fetus. Among the more popular “tales” inquired about are the fetal heart rate test, the Chinese calendar test and the Draino test. Are any of these methods based in scientific fact? After a thorough MEDLINE search of the relevant literature the answer, simply, is no. In the handful of studies investigating the relationship between fetal heart rate and fetal sex,¹⁻³ heart rates did not differ significantly between male and female fetuses. No formal studies have been done on the predictive value of the Chinese calendar method, and an informal study of the Draino test reported in a letter to *JAMA*⁴ equated the predictive efficacy of the test to that of flipping a coin. Although we tried, we were unsuccessful in obtaining any information on the origin of these methods.

The aim of this study was to determine and compare the predictive value of 3 common methods people have used to predict fetal sex — the fetal heart rate method, the Chinese calendar method and the Draino test.

Methods

Patients who were between their 26th and 34th week of an uncomplicated pregnancy, who had not undergone in vitro fertiliza-



tion, chorionic villus sampling or amniocentesis and who were not scheduled for an ultrasound after their 26th week were eligible for the study; 20 women from the Vancouver area agreed to participate. All data were collected during regular prenatal office visits.

Fetal heart rates were recorded with a doppler fetoscope for 1 min. The theory is that if the fetal heart rate is 140 beats/min or greater, the fetus is female, and if the fetal heart rate is 139 beats/min or lower, the fetus is male.

The mothers’ date of birth and the month of conception were determined, and these dates were converted into their lunar equivalents (using dual roman/lunar calendars for 1997 and 1998). The Chinese lunar calendar chart⁵ was then used to predict the sex of each baby.

For the third method, urine samples were collected and tested immediately after they were provided; 1/4 teaspoon of Draino crystals was added to 3 mL of urine and the solution was agitated and allowed to dissolve. The colour of the resulting solution (brown or green) was then noted. Some health care professionals and patients believe that green indicates the fetus is male and brown indicates the fetus is female; others, however, believe the opposite to be true. Given the conflicting views, we examined both theories for their predictive value.

Table 1: Fetal sex predictions for each of the 3 tests and final outcome

Patient	FHR; beats/min	Test; fetal sex prediction				Sex of the child
		FHR test	Chinese calendar test	Draino test 1*	Draino test 2*	
AK	150	G	G	G	B	B
LB	135	B	B	B	G	G
RB	142	G	G	B	G	B
KB	147	G	G	B	G	G
EC	139	B	B	B	G	G
BH	142	G	B	B	G	B
BH2	145	G	G	B	G	G
VH	145	G	G	G	B	B
JL	147	G	G	G	B	G
KL	145	G	G	B	G	G
SM	150	G	G	B	G	G
ZN	134	B	G	B	G	G
JP	145	G	G	B	G	B
BR	146	G	G	B	G	B
JR	144	G	G	B	G	B
SR	139	B	G	B	G	G
FR	140	G	G	B	G	B
PS	152	G	G	B	G	G
BT	140	G	G	B	G	B
TW	133	B	B	B	G	B

Note: FHR = fetal heart rate, B = boy, G = girl.

*The first column for Draino test sex predicted contains predictions based on the assumption that a green solution indicates a boy; those in the second column, on the assumption that green indicates a girl.

Results

The average age of the 20 women who participated in the study was 29; the mean gestational age when the data were collected was 29 weeks. There were 10 girls and 10 boys born to the 20 women. See Table 1 for the predictions based on each test and the outcomes. The fetal heart rate method had a sensitivity of 10% and specificity of 60% for predicting boys and a sensitivity of 60% and specificity of 10% for predicting girls. Positive predictive values were also low. The positive predictive values calculated for the Chinese calendar data were 50%. For the Draino test, using green to predict boys, the sensitivity was 80% and the specificity was 10% for predicting boys, and the sensitivity was 10% and specificity 80% for predicting girls. Positive predictive values were 47% and 33%, respectively. When we reversed our theory and used green to predict girls, the results were only slightly better. Sensitivity was 20% and specificity 90% for predicting boys, while sensitivity was 90% and specificity 20% for predicting girls. The positive predictive values were 67% and 53%, respectively.

Our results indicate there was no predictive value in any of the 3 tests we studied.

Interpretation

We approached the old wives' tales as "screening tests" and investigated the predictive value of each. Each of the methods possessed the characteristics of a good screening test — they were quick, easy to perform and interpret, inexpensive and acceptable to patients.

Our results for the fetal heart rate test were similar to those presented in the previous studies¹⁻³ investigating differences between male and female fetal heart rates. No significant differences have been found in any study we know of to date. Therefore, we conclude that the fetal heart rate test has no value in predicting fetal sex.

The Chinese calendar test was the one test that had not been previously studied. The chart used to determine fetal sex was supposedly discovered in a Royal tomb near Beijing.⁵ We were unable to determine its authenticity. Be that as it may, our study showed no value in the chart for predicting fetal sex.

Controversy arose regarding which colour should be used to predict which sex in the Draino test. The only reference to the test in the medical literature⁴ indicated a green urine solution meant a baby boy was to be born. However, because others thought the opposite to be true, we examined our data both ways to see if either theory was effective in predicting fetal sex. There seems to be no value in the Draino test for predicting fetal sex.

In conclusion, the 3 wives' tales we examined did not stand up to the "rigors" of our empirical investigation.

References

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