






HUMAN HEALTH | ENVIRONMENTAL HEALTH



Giọt máu khô

trong sàng lọc trước sinh

Nội dung



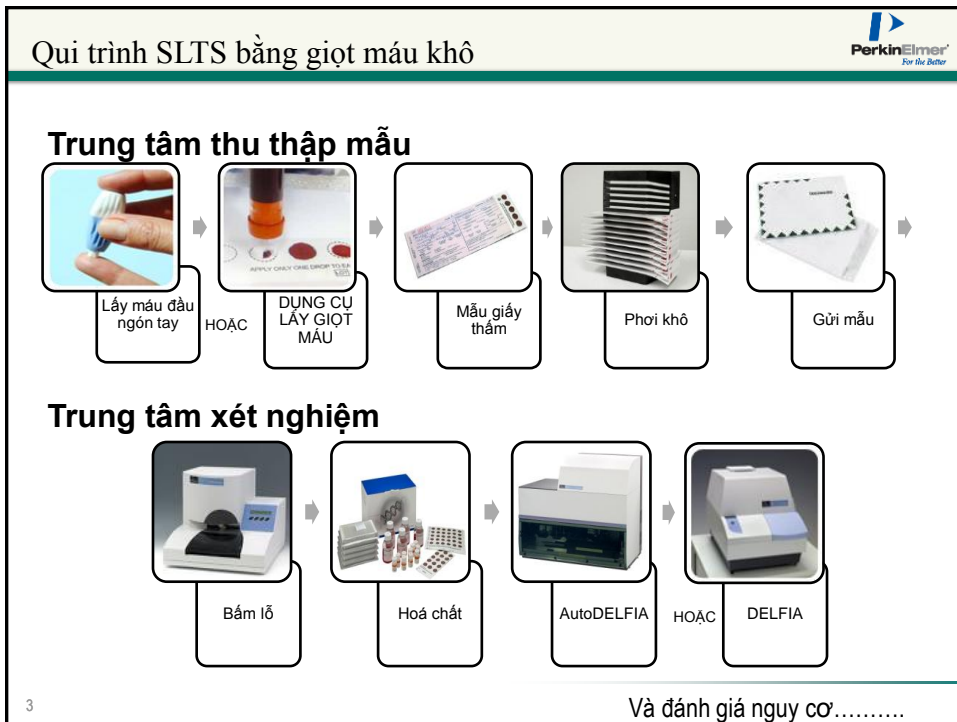
Trung tâm nào đang thực hiện XN sàng lọc trước sinh bằng giọt máu khô (DBS)

Tính thực tiễn của XN SLTS bằng giọt máu khô

Giá trị lâm sàng và hiệu quả phát hiện các bất thường


Ứng dụng

2



3

NTD labs New York USA




NTD – SLTS bằng giọt máu khô hơn 20 năm

75% SLTS trong quý 1 ở được thực hiện trên mẫu máu khô

Đánh giá hiệu quả XN SLTS quý 1 trên mẫu máu khô (AJOG 2006)

XN chính xác và có độ nhạy cao



NTD Labs has been a leader in the development of prenatal screening tests for over 20 years. The lab's first trimester prenatal screening test for Down syndrome, First Trimester Screen (FTS), uses a non-invasive method to determine a patient's risk for having a baby with Down syndrome, and trisomy 18 and 13 earlier in the pregnancy than alternative protocols and with higher detection rates and lower false positive rates. It is the only high sensitivity prenatal screen that uses the Free Beta HCG biomarker along with PAPP-A and Nuchal Translucency measurement in assessing individual patient risk for a fetus with Down syndrome. With the use of this screen, physicians can provide earlier assurance and earlier answers as a 91% detection rate and a 1% false positive rate (sensitivity increases to a 95% detection rate at a 2% false positive rate when patients undergo a prenatal fetal nasal bone assessment as well).

4

CGC Bồ Đào Nha



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SLTS sử dụng mẫu máu khô từ năm 2001

5

Một trong những trung tâm xét nghiệm lớn nhất Châu Âu

TT chẩn đoán trước sinh Palermo, Ý



Centro Diagnosi Prenatale

Studio associato dei Dottori Orlandi e Rossi.

Via Villareale 35, Palermo tel. 091/328655 tel/fax 091/334886
e-mail diagnosiprenatale@diagnosiprenatale.it
www.diagnosiprenatale.it

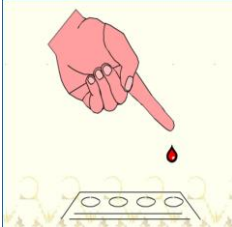
- Informazioni
- Interventi
- Calcolo dei rischi
- Diagnostica
- Cardiologia
- Chirurgia
- Ecografia fetale
- Ecografia del 3° trimestre
- Ecografia fetale
- Ecografia fetale e
- Ecografia tridimensionale
- Diagnostica Prenatale
- Genetica Prenatale

Il Centro ha iniziato ad operare nel settore della Diagnosi Prenatale e della Medicina Fetale sin dal 1984, accumulando un'esperienza specifica che non ha paragoni con altri Centri o singoli operatori dell'Italia Meridionale.

Dott. Francesco Orlandi, Giám đốc lâm sàng

Đã cộng tác lâu dài với

10,000 ca SLTS quý 1 thai kì hằng năm



6

Warnex ở Quebec, Canada

A Quick and Easy METHOD

BLOOD DRAW

A few drops of blood are collected from the tip of your finger.

MEASUREMENTS

- PAPP-A (Pregnancy-Associated Plasma Protein A)
- Free **β**-HCG (Human Chorionic Gonadotropin)

ULTRASOUND

The ultrasound is also used to determine more precisely the age of the fetus.

MEASUREMENTS

- Nuchal Translucency (NT) (Amount of fluid accumulation at the back of the fetal neck. Fetuses affected with certain chromosomal anomalies or increased nuchal translucency)
- Nasal Bone (NB) (70% of fetuses affected by trisomy have an absent nasal bone during the first trimester of pregnancy)

Detection Rate 95% <small>when combined with NT and NB</small>	False Positive Rate 2% <small>when combined with NT and NB</small>
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© Karam et al. (2001)

25,000 ca SLTS quý 1 mỗi năm

Là trung tâm nghiên cứu

7

Những ai đang được thụ hưởng SLTS bằng giọt máu khô?

Mỹ – 75% tất cả các mẫu SLTS quý 1

- Đa số là các tình nguyện viên tham gia thử nghiệm FASTER

Nga

- Ekaterinburg, Krasnoyarsk, Novosibirsk, Saratov

Bồ Đào Nha

- CGC Genetics


Ý

- Orlandi Clinic

Canada

- Warnex (Montreal, Quebec)

8

Những quốc gia đang đánh giá để đưa DBS vào chương trình SLTS 

- Ấn Độ
- Trung Quốc
- Ukraine
- Hà Lan
- Tây Ban Nha
- Hi Lạp
- Brazil
- Argentina

9



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Lí do nên dùng mẫu máu khô

Hiệu quả kinh tế & lấy mẫu, thu thập, vận chuyển và lưu trữ mẫu 


Huyết thanh

Mẫu máu khô

Chi phí và các vấn đề liên quan




11

Tại sao sàng lọc bằng mẫu máu khô? 

- Lấy mẫu đơn giản, không cần quay li tâm
- Dễ dàng hơn, an toàn hơn, hiệu quả kinh tế hơn trong vận chuyển
- Giảm chất thải sinh học
- Lấy máu ở đầu ngón tay cần ít máu hơn
- Tỉ lệ phát hiện bất thường cũng tương đương (Perni et al 2006)


12



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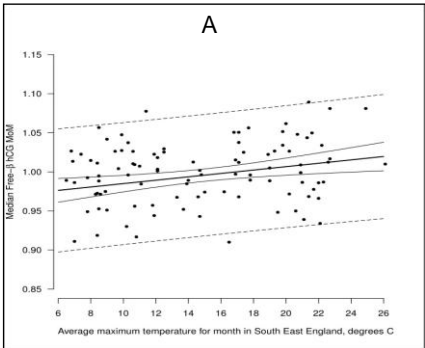
SLTS quý 1 – cơ bản về lâm sàng



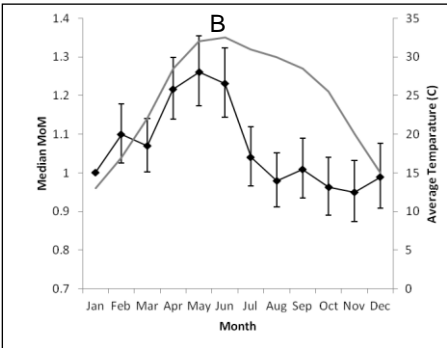
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Tính ổn định của hCG β tự do trong huyết thanh

A




B



A) Anh: điều kiện khí hậu ít ảnh hưởng đến trung vị MoM hCG β tự do

B) Ấn Độ: khí hậu thay đổi theo mùa ảnh hưởng đáng kể đến trung vị MoM hCG β tự do

Barking, Havering and Redbridge  University Hospitals
NHS Trust

14

Ảnh hưởng của tính ổn định hCG lên nồng độ hCG β tự do

Tăng nồng độ hCG β tự do

Tăng tỉ lệ dương tính giả

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15

Tính ổn định của hCG β tự do Stability cải thiện đáng kể khi sử dụng DBS

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PRENATAL DIAGNOSIS
Prenat Diagn 2011; 31: 293–298.
Published online 4 February 2011 in Wiley Online Library
(wileyonlinelibrary.com) DOI: 10.1002/pd.2709

The stability of free- β human chorionic gonadotrophin and pregnancy-associated plasma protein-A in first trimester dried blood spots[†]

Nicholas J. Cowans¹, Anastasia Stamatopoulou¹, Paivi Liitti², Mikko Suonpaa² and Kevin Spencer^{1*}

¹Prenatal Screening Unit, Department of Clinical Biochemistry, King George Hospital, Barley Lane, Goodmayes, Essex, UK
²PerkinElmer, Turku, Finland

Objectives To determine the stability of first trimester free- β human chorionic gonadotrophin (free- β hCG) and pregnancy-associated plasma protein-A (PAPP-A) in dried blood spots (DBSs) under typical storage conditions.


Methods First trimester maternal blood was spotted onto filter paper and left to dry. DBSs were analysed for PAPP-A and free- β hCG using an AutoDELFIA dual assay at $t = 0$. Cards were stored at one of -20°C , refrigerator temperature, room temperature or 30°C and reanalysed at set future time points.

Results Free- β hCG was stable (<10% change in concentration) under all temperatures tested for at least 35 days. PAPP-A was stable at -20°C and refrigerator temperature for at least 35 days. However, PAPP-A levels decreased by 10% at 4.1 days at room temperature and at 3.9 days at 30°C . Longer-term storage at -20°C and refrigerator temperature showed that both PAPP-A and free- β hCG levels were significantly decreased by 107 and 244 days.

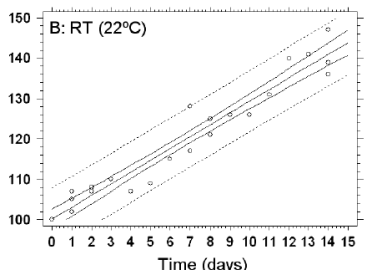
Conclusions Free- β hCG stability is greatly improved in DBS compared to serum storage; however PAPP-A stability is decreased in the DBS medium. Despite this DBS, screening may not necessitate such strict storage and transportation rules compared to serum screening programmes. Copyright © 2011 John Wiley & Sons, Ltd.

16

Cowans – tính ổn định của hCG β tự do trong huyết thanh

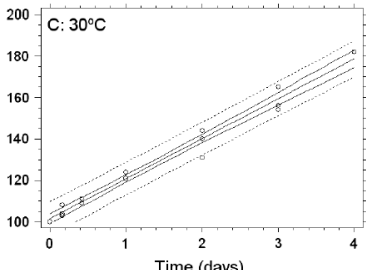


hCG β tự do trong huyết thanh



B: RT (22°C)


- β -hCG tự do và PAPP-A đều ổn định trong huyết thanh khi dùng trong sàng lọc thường qui...
- ...trong điều kiện 4° C và thời gian vận chuyển ngắn nhất
- Nồng độ β -hCG tự tăng khá nhanh ở nhiệt độ phòng do sự phân li của phân tử hCG

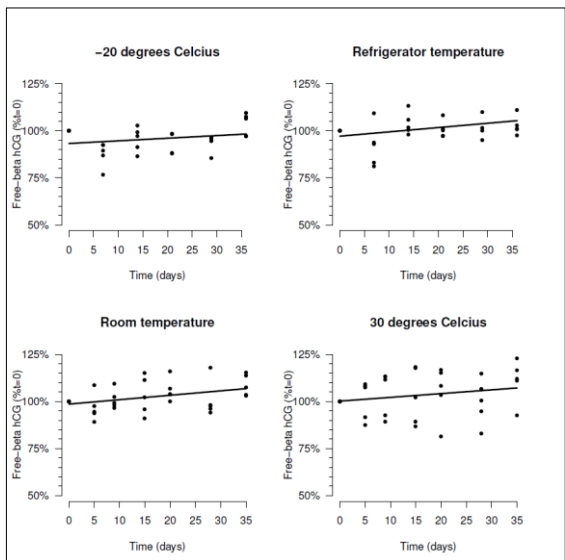


C: 30°C

17

Kết quả của hCG β tự do trong mẫu máu khô



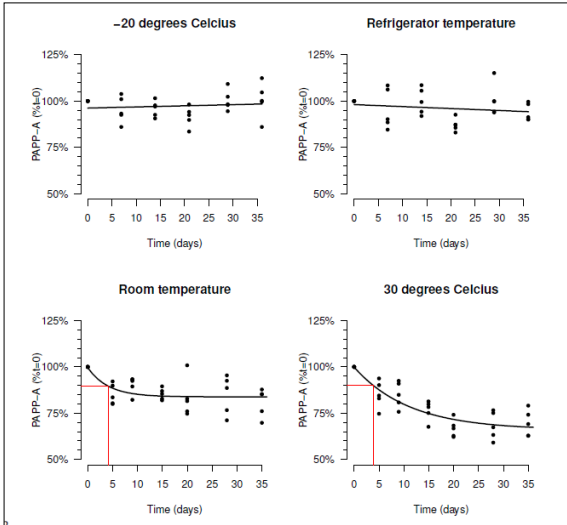


- hCG β tự do ổn định trong mọi điều kiện khi khảo sát sau ít nhất 35 ngày, với sai lệch cho phép < 10% so với thời điểm vừa mới lấy mẫu
- So với huyết thanh thì hCG β tự do trong mẫu máu khô cao ổn định hơn nhiều

18

Barking, Havering and Redbridge University Hospitals NHS

Kết quả của PAPP-A trong mẫu máu khô



- PAPP-A ổn định khi giữ lạnh hoặc ở -20° C trong ít nhất 30 ngày
- Nồng độ PAPP-A giảm 10% sau 4.1 ngày ở nhiệt độ phòng và sau 3.9 ngày ở 30° C.

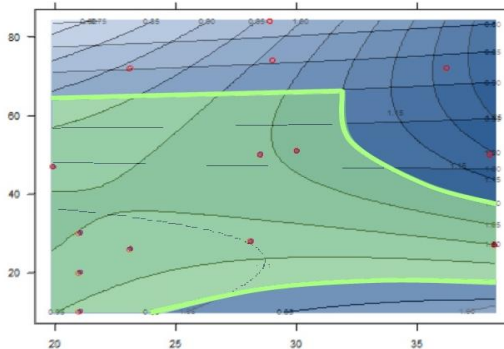
19

Barking, Havering and Redbridge University Hospitals NHS Trust

Điều kiện phơi khô mẫu xét nghiệm PAPP-A và hCGβ tự do



Nhiệt độ: 20-32° C
Độ ẩm : ≤70%



Hiện đang nghiên cứu ứng dụng dụng cụ làm khô mẫu để phục vụ cho những nơi không đáp ứng được các điều kiện trên

20

In press, Spencer et al

Orlandi/NTD Study UOG 1997

Ultrasound Obstet. Gynecol. 18 (1997) 381-386

First-trimester screening for fetal aneuploidy: biochemistry and nuchal translucency

F. Orlandi, G. Damiani, T. W. Hallahan*, D. A. Krantz* and J. N. Macri*

Prenatal Diagnostic Centre, Carvello Hospital, Palermo, Italy; *Research Division, NTD Laboratories, Inc., Hampton Station, NY, USA

Keywords: FREE BETA SUBUNIT, CHORIONIC GONADOTROPIN, PREGNANCY-ASSOCIATED PLASMA PROTEIN A, NUCHAL TRANSLUCENCY, DOWN SYNDROME, NIPODIAK SCREENING

ABSTRACT

Maternal blood alpha-fetoprotein, some collected prospectively from 2010 singleton pregnancies between 7+0 and 13+4 weeks that included 18 chromosomally abnormal pregnancies (13 Down's syndrome, four trisomy 18, two trisomy 13 and one triploidy), 13 out of 774 pregnancies underwent advanced nuchal translucency measurement and nuchal translucency (NT) was measured for each of Down's syndrome and trisomy 18 based on biochemistry (free beta human chorionic gonadotropin and pregnancy-associated plasma protein A), nuchal translucency and the combination of both. In prospective biochemical screening, false-positive rates for Down's syndrome and trisomy 18 were 1.1% (16/2497) and 1.2% (12/1277) at median 11.7 years of age and 14.2% (19/903) and 1.5% (14/871) in women < 35 years of age, respectively. The detection efficiency of combined was 80% (100% in women < 35 years and 11/12, 92% in women > 35 years). Nuchal translucency measurements alone detected 37% (8/94) of cases of aneuploidy at a 1.3% (1/77) false-positive rate. Combining both the distribution of free beta hCG, false-positive rate nuchal translucency, 7% by nuchal translucency and 67% by combined biochemical and advanced evaluation for Down's syndrome and other chromosomal abnormalities in the first trimester of pregnancy yield a detection capability that may exceed that of current second-trimester prenatal screening protocols. The potential for enhanced detection coupled to an earlier alert of fetal complications could represent a substantial advantage to both clinician and patient.

INTRODUCTION

Prenatal screening for Down's syndrome and other chromosomal abnormalities is conducted in the second trimester of pregnancy with a combination of maternal serum biochemical markers and maternal age. The most commonly used biochemical markers are alpha-fetoprotein, human chorionic gonadotropin (hCG), unconjugated estradiol and free beta hCG. These markers are used in various combinations in multi-marker screening approaches with the aim of optimizing the detection efficiency of the screen, possible false-positive rate.

Measuring the nuchal thickness of nuchal screen screening into the first trimester would represent a significant advantage to both clinician and patient. This option offers numerous benefits over data from retrospective reports^{1,2}. Although these second-trimester biochemical markers in current use appear to be sufficient in first-trimester Down's syndrome screening³, the B-ACC⁴ represents an important exception. A combination of first-trimester serum markers (pregnancy-associated plasma protein A, PAPP-A) and second-trimester biochemical markers (free beta hCG) levels in cases of Down's syndrome approached twice the normal level (1.4 multiples of the median (MOM))⁵. Measurement of maternal serum pregnancy-associated plasma protein A (PAPP-A) may represent a further enhancement of first-trimester biochemical detection of Down's syndrome. Recent retrospective reports indicate trisomies detected when median PAPP-A levels in the significantly reduced to less than 1.4 MOM in over 10% cases of Down's syndrome⁶. Importantly, this is a low correlation between the B-ACC and PAPP-A and therefore the two markers evaluated simultaneously may be expected to achieve an even higher degree of detection than used independently.

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381

Là một trong những nghiên cứu tiên cứu đầu tiên về SLTS trên 2010 thai phụ. Mẫu máu khô lấy từ đầu ngón tay.

Trung tâm NTD phát triển kĩ thuật ELISA

Chỉ 1/3 mẫu nghiên cứu là có được dữ liệu NT (774) – 11 ca T21. Chỉ có 7 ca có NT

Với tỉ lệ dương tính giả 5%, tỉ lệ phát hiện bất thường là 61% đ/v XN sinh hoá, 75% đ/v NT và 87% khi kết hợp

Krantz/NTD study – Obstet Gynecol 2000

Ultrasound Obstet. Gynecol. 21 (2000) 102-107

First-Trimester Down Syndrome Screening Using Dried Blood Biochemistry and Nuchal Translucency

DAVID A. KRANTZ, TERENCE W. HALLAHAN, PhD, FRANCESCO ORLANDI, MD, PHILIP RICHANAN, PhD, JOHN W. LARSEN, Jr, MD, AND JAMES N. MACRI, PhD

OBJECTIVE To assess the effectiveness of free beta-hCG, pregnancy-associated plasma protein A, and nuchal translucency in a prospective first-trimester prenatal screening study for Down syndrome and trisomy 18.

METHODS Risk was calculated for Down syndrome and trisomy 18 based on maternal age and biochemistry (free beta-hCG, estradiol and unconjugated estradiol) (n = 10,251), nuchal translucency only (n = 1006), and the combination of nuchal translucency and biochemistry (n = 1006).

RESULTS The study population included 11 Down syndrome and 20 trisomy 18 cases. Nuchal translucency measurements were made in 43 Down syndrome and 11 trisomy 18 cases. Down syndrome screening using combined biochemistry and advanced evaluation for trisomy 18 had a 91% (95% confidence interval [CI] 83%, 93%) and detection rate of 87% (95% CI 81%, 90%) in pregnancies aged 30 years or older patients. The false-positive rate was 1.2%, 0.7% CI 0.5%, 0.9% and detection rate was 1.2%, 0.7% CI 0.5%, 0.9% for trisomy 18 screening. The false-positive rate was 1.4%, 0.9% CI 0.6%, 1.8% and detection rate was 1.4%, 0.9% CI 0.6%, 1.8% for trisomy 18 screening. Using modeling, at a least 1% false-positive rate, the Down syndrome detection rate was 61%. Conversely, at a least 5% Down syndrome detection rate, the false-positive rate was 1.4%.

CONCLUSION First-trimester screening for Down syndrome and trisomy 18 utilizing nuchal translucency measurements in addition to serum biochemical markers is effective in diagnosis and prognosis. (Obstet Gynecol 2000;93:102-107) © 2000 by The American College of Obstetricians and Gynecologists.

Financial Disclosure

Authors: Krantz and Hallahan are employees and authors Macri is the owner of NTD Laboratories. Author Macri was second person involved in the use of free beta hCG in Down syndrome screening.

second trimester of pregnancy with protocols that include two or more of the biochemical markers alpha-fetoprotein (AFP), hCG, free beta hCG, and unconjugated estradiol (E2). These screening protocols have detection rates for Down syndrome by using apparently healthy fetuses in the range of 30% to 79% (Obstet Gynecol 1994;23:102-107). The most optimal protocol for Down syndrome screening (beta hCG, free beta hCG, and PAPP-A) was reported by Krantz et al (Obstet Gynecol 1996;27:124-129). During studies^{1,2} have shown that free beta hCG, a second-trimester marker, and pregnancy-associated plasma protein A, a biochemical marker not effective in the second trimester, are both predictive screening markers for Down syndrome in the first trimester of pregnancy. More recently, advanced measurement of fetal nuchal translucency also has been found to be effective in screening for Down syndrome³.

Because these biochemical and biophysical screening approaches are relatively independent, first-trimester screening for Down syndrome can be optimized beyond the capabilities of either approach alone by combining the two. Several recent studies⁴⁻⁶ with small data sets or studies based on modeling have shown that such combined screening could detect 70-80% of Down syndrome cases in the first trimester. A recent opinion by the ACCOG Committee on Genetic⁷ stated that first-trimester screening for chromosome abnormalities offers many advantages over second-trimester screening, and it suggested further studies to confirm the efficacy of nuchal translucency screening with or without serum markers. In light of this suggestion, we

VOL. 94, NO. 1, AUGUST 2000

ISSN: 0896-1056/00/0000-0000

Các nghiên cứu tiên cứu 1995-1998. 10,251 thai phụ. Mẫu máu khô – máu đầu ngón tay hoặc máu tĩnh mạch có dùng dụng cụ nhỏ giọt máu

Trung tâm NTD phát triển kĩ thuật ELISA

Chỉ ½ mẫu nghiên cứu là có dữ liệu (5809) – 33 ca bị T21. 13 ca T18

30/33 (91%) ca T21 được phát hiện, dương tính giả 7.9%

Perni, Chervenak, Chasen, AJOG 2006



American Journal of Obstetrics and Gynecology (2006) 194, 127-30



Journal of Obstetrics & Gynecology

Clinical use of first-trimester aneuploidy screening in a United States population can replicate data from clinical trials

Sriram C. Perni, MD,* Mladen Predracic, MD, MSc, Robin B. Kalish, MD, Frank A. Chervenak, MD, Stephen T. Chasen, MD

Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Weill Medical College of Cornell University, New York, NY

Received for publication March 23, 2005; revised May 16, 2005; accepted June 14, 2005

KEY WORDS

First-trimester aneuploidy screening
Trisomy 21
Down syndrome
Trisomy 18

Objective: The clinical application of first-trimester aneuploidy screening remains controversial in the United States. The aim of our study was to evaluate the performance of maternal age, first-trimester biochemical measurements, pregnancy-associated plasma protein A, and free beta-human chorionic gonadotropin used in aneuploidy screening in a single institution outside of a clinical trial.

Study design: Four thousand eight hundred eighty-three patients underwent first-trimester aneuploidy screening at 11 to 13 6-7 weeks of gestation (fetal crown-rump length 45 mm to 84 mm) at our institution between January 2002 and September 2004. Measurement of nuchal translucency was performed according to the First-Trimester Screening standards and was included in the overall risk assessment performed by NTD Laboratories. Measurement of pregnancy-associated plasma protein A and free beta-human chorionic gonadotropin on maternal blood samples was performed by NTD Laboratories and was reported as gestational-specific multiples of the median adjusted for ethnicity. Risk adjustment for trisomy 21 and trisomy 18 was done with a modified algorithm using maternal age, serum biochemistry, and nuchal translucency. Only singleton gestations (N = 4613) were included in the analysis.

Results: The median maternal age was 33.6 years (interquartile range 31.9 to 36.0) and the median crown-rump length was 61.2 mm (interquartile range 53.7 to 67.3) at the time of screening. There were a total of 22 fetuses diagnosed with trisomy 21 and 6 with trisomy 18. The detection rates for trisomy 21 for a 5% false-positive rate and 1% false-positive rate were 90.9% (95% CI 87.2-94.6) and 77.2% (71.4-83.0), respectively. Similarly, the detection rates for trisomy 18 at a 5% false-positive rate and a 1% false-positive rate were 100% (95% CI of 98 and 100%) and 91%, respectively. There was no false-positive result from nonpregnant tests.

Presented at the Twenty-Fifth Annual Meeting of the Society for Maternal-Fetal Medicine, Boston, February 7-12, 2005.

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doi:10.1016/j.ajog.2005.06.008

DH Cornell, USA

Đánh giá hiệu quả của XN sàng lọc kết hợp của quý 1 tại 1 trung tâm

4883 thai phụ được xét nghiệm sàng lọc kết hợp trong quý 1 – sử dụng máu toàn phần, giọt máu khô

KẾT QUẢ: trung vị tuổi thai phụ là 33 và 22 thai được chẩn đoán T21

Tỉ lệ phát hiện: 90.9% , tỉ lệ dương tính giả 5%

Krantz, Prenatal Diagnosis 2011



Prenatal Diagnosis
Prenat (2011)
Published online by Wiley Online Library
(wileyonlinelibrary.com) DOI: 10.1002/pd.21702

First trimester Down syndrome screening with dried blood spots using a dual analyte free beta hCG and PAPP-A immunofluorescent assay

David Krantz¹, Terence Halbach¹, Rachel Reeves¹, Kunglin He¹, Howard Calkins¹, John Shervin¹ and Jonathan Cantor¹

¹NYU Langone Medical Center, Weill Cornell Medical College, New York, NY, USA

Objective: To determine the effectiveness of first trimester Down syndrome screening with dried blood spots using a dual analyte free beta human chorionic gonadotropin (hCG)/pregnancy associated plasma protein A (PAPP-A) immunofluorescent assay.

Method: An initial retrospective study of 54 Down syndrome cases and 1064 control specimens was performed followed by a series of 20,123 specimens from routine screening. Detection rates in a first trimester positive case were determined separately based on reference data from the retrospective study and from dried blood spots in the routine screening study set.

Results: On the basis of the retrospective analysis, the estimated detection rate using free beta hCG, PAPP-A and nuchal translucency (NT) was 97% at a 5% false-positive rate (FPR) and 79% at a 1% FPR. In the prospective study, the detection rates for trisomy 21 in 54 Down syndrome cases and 1064 control specimens, adjusting for ethnicity, were 92% and 90%, respectively.

Conclusion: Analysis of free beta hCG and PAPP-A using a dual analyte dried blood spot assay is an effective first trimester Down syndrome screening method for the identification of Down syndrome or the identification of elevated parental screening programs. Copyright © 2011 John Wiley & Sons, Ltd.

see www: free beta hCG, PAPP-A, maternal serum screening, dried blood spot, fetal aneuploidy

INTRODUCTION
Although Down syndrome screening has historically been conducted during the second trimester of pregnancy, screening in the first trimester using free beta human chorionic gonadotropin (hCG), pregnancy associated plasma protein A (PAPP-A) and nuchal translucency (NT) has become clinically accepted (Krauss et al., 2009; Malone et al., 2005; Nicolaides et al., 2005; Poon et al., 2006; Kirkgaard et al., 2006; Schacter et al., 2005). Initial controversy over whether to use total or free beta hCG in first trimester screening has now been resolved with the overwhelming majority of current testing from beta hCG. The 2010 high quality evidence based review of the free beta hCG, PAPP-A and NT based detection rates of approximately 90% for a 5% false-positive rate (Krauss et al., 2009; Malone et al., 2005; Nicolaides et al., 2005; Poon et al., 2006; Kirkgaard et al., 2006; Schacter et al., 2005).

The combination of biochemistry and NT has been shown to perform more effectively, at earlier time points, than biochemical testing alone (Krauss et al., 2009; Evans et al., 2007; Kirkgaard et al., 2006). As a result, protocols have been developed in which blood is drawn during 11-13 weeks of pregnancy followed by NT measurement during 11-13 weeks of pregnancy. A significant benefit to this protocol, aside from the improved performance resulting in higher detection rates and lower false-positive rates, is that the patient can receive an immediate result at the conclusion of the ultrasound examination because the biochemical testing will have already been completed. The patient can then choose to undergo chorionic villus sampling (CVS) at this earlier date rather than waiting for an amniocentesis. Not surprisingly, a recent study by Fan et al. (2010) has shown that patient satisfaction is improved in situations where they do not have to wait at similar time points in the pregnancy.

The use of dried blood spot technology in conjunction with the first trimester protocol is a major enabler in adapting the early screening process. Dried blood spots (DBS) collection can be facilitated in centers where phlebotomy may not be available, and the method can draw the blood themselves by a simple finger stick method. No less important than the collection method is the subsequent testing process. The use of a sensitive and specific immunoassay platform that can effectively detect the population transfer derivatives (PTD) (Cantor et al., 1995).

We have successfully utilized dried blood spots from beta hCG/PAPP-A and free beta hCG/PAPP-A (previously


Kĩ thuật mới miễn dịch huỳnh quang

NC hồi cứu trên 54 ca T21, 1064 ca chứng

Sàng lọc thường qui 146,513 thai phụ để thiết lập phân bố của các thông số

Kết hợp với NT. Tỉ lệ phát hiện 92%-90% đ/v thai từ 9 đến 13 tuần





So sánh sự phân bố các thông số với dữ liệu đã được công bố


PAPP-A Unaffected SD (log10)

<i>Publication</i>	<i>N</i>	<i>SD</i>
Malone 2005	89	0.2214
Weinans 2005	16953	0.225
Gyselaers 2005	12781	0.2361
Avgidou 2005	1564	0.237
Dual DBS Assay	758	0.2403
Wojdemann 2005	673	0.2415
Orlandi 2005	30234	0.2454
Borrell 2004	425	0.2495
Scott 2004	1454	0.25
Muller 2003	3169	0.251
Wald 2003	267	0.2543
Spencer 2002/2003	10000	0.2558
Crossley 2002	377	0.2659
Tsai 2001	5636	0.267
Tsukerman 1999	200	0.2868
De Biasio 1999	320	0.2923
Casals 1999	500	0.3597
Overall	84642	0.2442

Free hCG β Unaffected SD (log10)

<i>Publication</i>	<i>N</i>	<i>SD</i>
Dual DBS Assay	758	0.1909
Orlandi 2005	10000	0.2177
Biaqiotti 1995	246	0.2208
Forest 1997	500	0.2498
Brambati 1994	89	0.2573
De Biasio 1999	1454	0.26
Spencer 2002/2003	13073	0.2613
Wald 2003	425	0.2651
Wheeler 1998	673	0.2654
Avgidou 2005	30234	0.2661
Biaqiotti 1998	200	0.2676
Muller 2003	5634	0.269
Crossley 2002	16912	0.269
Weinans 2005	320	0.2727
Haddow 1998	3169	0.275
Wald 1996	383	0.2833
Tsukerman 1999	11659	0.295
Casals 1999	136	0.3041
Juanaux 1996	51	0.3474
Overall	95158	0.2655

25 DELFIA/AutoDELFIA PAPP-A/Free hCG β Dual DBS kit : FTS- DR 90% FPR 5%



**Giá trị của mẫu máu khô –
CVs (hệ số biến thiên) và SD (độ lệch chuẩn)**

SD nhỏ = marker tốt


Những yếu tố ảnh hưởng lên SD

- Sự biến thiên sinh học (không thể khống chế được)
- Biến thiên do thao tác và vận chuyển (tính ổn định) – mẫu máu khô tốt hơn
- Biến thiên do xét nghiệm (CV) – mẫu máu khô tốt hơn

Clinical performance of DBS = Serum

26

Độ lệch chuẩn (SD) nhỏ = marker tốt



DBS HT

SD nhỏ đóng góp tích cực nhiều hơn.....

CV lớn

SD nhỏ SD lớn

CVs lớn CVs thấp

Đánh giá trên lâm sàng

Biến thiên do khâu thao tác/ vận chuyển


27


Hiệu quả phát hiện bất thường là tương đương




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Ứng dụng

Chứng nhận của FMF /UKNEQAS 

 **Chứng nhận của FMF**
Đang chờ công bố nghiên cứu của Spencer/Wright chứng minh DBS tương đương với huyết thanh


 **Các thông số của DBS**

- Hiện có trong phần mềm LifeCycle
- Sẽ được tích hợp với phần mềm FMF

 **Chương trình thí điểm DBS đã bắt đầu từ năm 2010**

- 15 phòng xét nghiệm tham gia
- Miễn phí

29


Qualifications 

DBS được ứng dụng để mở rộng chương trình sàng lọc
DBS không thay thế sàng lọc trên huyết thanh một khi qui trình SL trên huyết thanh đã thực hiện tốt

DBS không thực hiện được đ/v PIGF

30

Kết luận



DBS đã sử dụng trong sàng lọc sơ sinh hơn 50 năm qua


DBS đã sử dụng trong sàng lọc trước sinh gần 20 năm qua

DBS là sự thay thế tuyệt vời của huyết thanh, đặc biệt ở vùng sâu vùng xa

Giá trị lâm sàng tương đương với huyết thanh

31

Thank you




32



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Back up slides

CVs, SDs and Detection Efficiency




Did you know.....

Research has shown that the ***preanalytical phase*** of the sample process accounts for more than two thirds of laboratory errors.




2/3

34

Detection Efficiency 

A function of 3 elements



Pre-Analytical Phase + **False Positive Rates** + **Post-Analytical Phase**

- Patient status
- Specimen collection
- Specimen transport to the laboratory
- Specimen processing

- Test performance
- Analytical procedure
- Internal QC
- External QC

- Interpretation
- Reporting

35 **Pre-Analytical Phase + Analytical Phase + Post-Analytical Phase**

Careful sample collection VERY important!