CHU BDX CENTRE HOSPITALIER UNIVERSITAIRE BORDEAUX

XXVIe COLLOQUE ACLF Association des Cytogénéticiens de Langue Française & XXXIIe COLLOQUE ATC Association des Techniciens en Cytogénétique

13, 14 & 15 SEPTEMBRE 2023 CARRÉ DES DOCKS - LE HAVRE

Les anomalies chromosomiques limitées au placenta (MCP) : Sont-elles mieux détectées avec le DPNI et quel impact sur la clinique de la grossesse ?

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ATC – Le Havre, 13 septembre 2023

1. ACLP – définition

2. ACLP – intérêt diagnostique

3. ACLP et DPNI

1. ACLP – définition

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3. ACLP et DPNI

Anomalies Chromosomiques Limitées au Placenta (ACLP)

- **Confined Placental Mosaicism (CPM)** = « mosaïques confinées au placenta »

Chromosomal abnormalities confined to the placenta (CACP), homogeneous or mosaicism.

Lestou et Kalousek, 1998,
Arch Dis Child Fetal Neonatal Ed

- **Discordances foeto-placentaires**

Table 1 Incidences of the different types of mosaicisms (CPM and TFM) found after chrionic villous and amniocytes karyotyping

Type	*Nature*	*Trophoblast (direct)*	*Mesenchyme (culture)*	*Amniocytes*	*Relative frequencies (%)*
I	CPM	Abnormal	Normal	Normal	39.9 (81/203)
II	CPM	Normal	Abnormal	Normal	40.4 (82/203)
III	CPM	Abnormal	Abnormal	Normal	6.9 (14/203)
IV	TFM	Abnormal	Normal	Abnormal	1 (2/203)
V	TFM	Normal	Abnormal	Abnormal	5.9 (12/203)
VI	TFM	Abnormal	Abnormal	Abnormal	5.9 (12/203)

Amniocyte confirmation of CV mosaicisms
FR Grati *et al*

European Journal of Human Genetics (2006) 14, 282–288

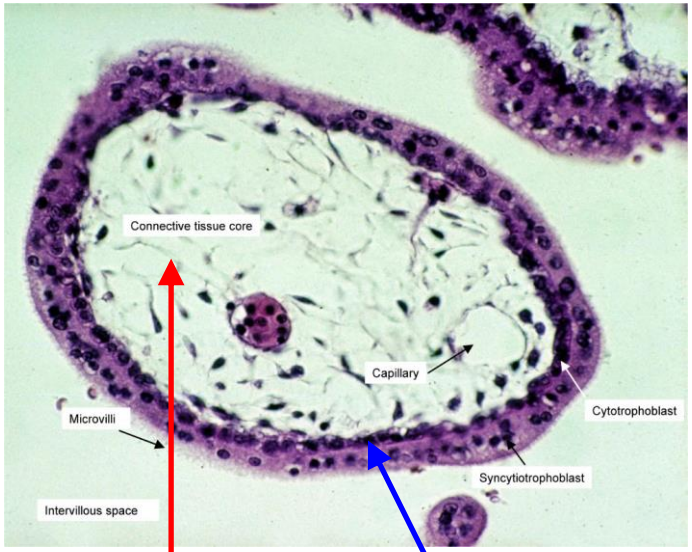
Anomalies Chromosomiques Limitées au Placenta (ACLP)

- **1,18% ACLP** (177/15109 choriocentèses) (*Grati et al., 2006, Eur J Hum Genet*)

- **Anomalies de nombre**

ou de structure,

- Cytotrophoblaste +/- axe mésenchymateux



Cytotrophoblaste (DPNI)

Axe mésenchymateux

3 catégories d'ACLP en fonction de la localisation de l'anomalie:

- **ACLP de type 1**: cytotrophoblaste (examen "direct")
  - *~ 50% des ACLP*
  - *Mosaïque*
  - *Accident d'origine mitotique*

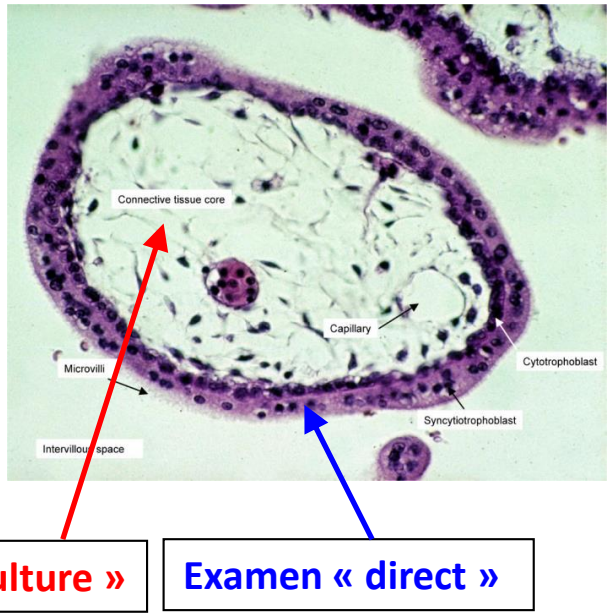
- **ACLP de type 2**: axe mésenchymateux ("culture")
  - *~ 40% des ACLP*
  - *Mosaïque*
  - *Accident d'origine mitotique*

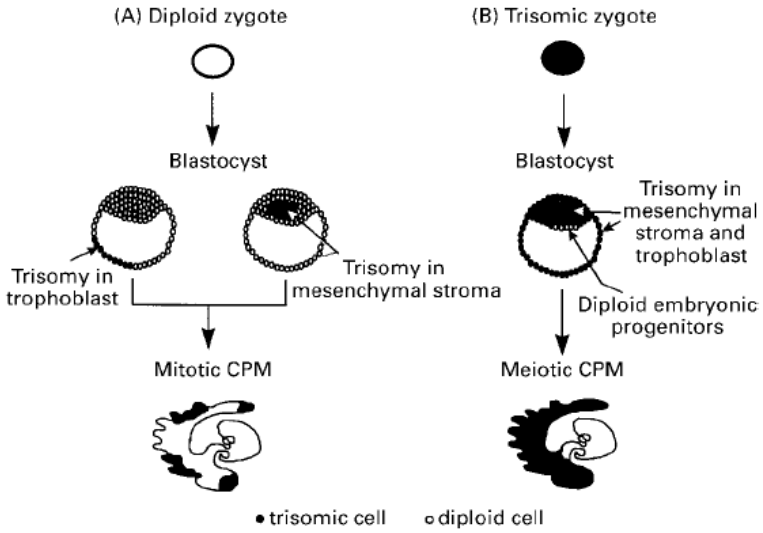
- **ACLP de type 3**: **ED** + **C**
  - *~ 10% des ACLP*
  - *En majorité homogène*
  - ***Accident d'origine méiotique***

(chromosomes 14, 15, 16 et 22)

(*Wolstenholme, 1996, Prenat Diagn*)

DPNI: ACLP type 1 et 3





Lestou et Kalousek, 1998, Arch Dis Child Fetal Neonatal Ed

Historique

- *Kalousek et Dill, 1983* (*Science*)

Chromosomal Mosaicism Confined to the Placenta in Human Conceptions

Our finding of two cases of mosaicism confined to the chorion among conceptuses with IUGR suggests that some, if not all, conceptuses with chorionic mosaicism can successfully complete intrauterine development. Intrauterine growth retardation may represent a significant clinical manifestation of abnormal placental function in such conceptions. Among the 31 gestations with IUGR described in this report, 19 were associated with significant maternal smoking, which alone could explain the fetal growth retardation. Three originated from pregnancies associated with severe maternal hypertension. In nine, the IUGR was unexplained; both detected cases of confined chorionic mosaicism came from this group. Further clarification of the frequency of confined chromosomal mosaicism, its association with IUGR, and its possible association with preterm unexplained intrauterine death is needed.

D. K. KALOUSEK
F. J. DILL
Departments of Pathology and Medical Genetics, University of British Columbia, Vancouver, V6T 1W5 Canada

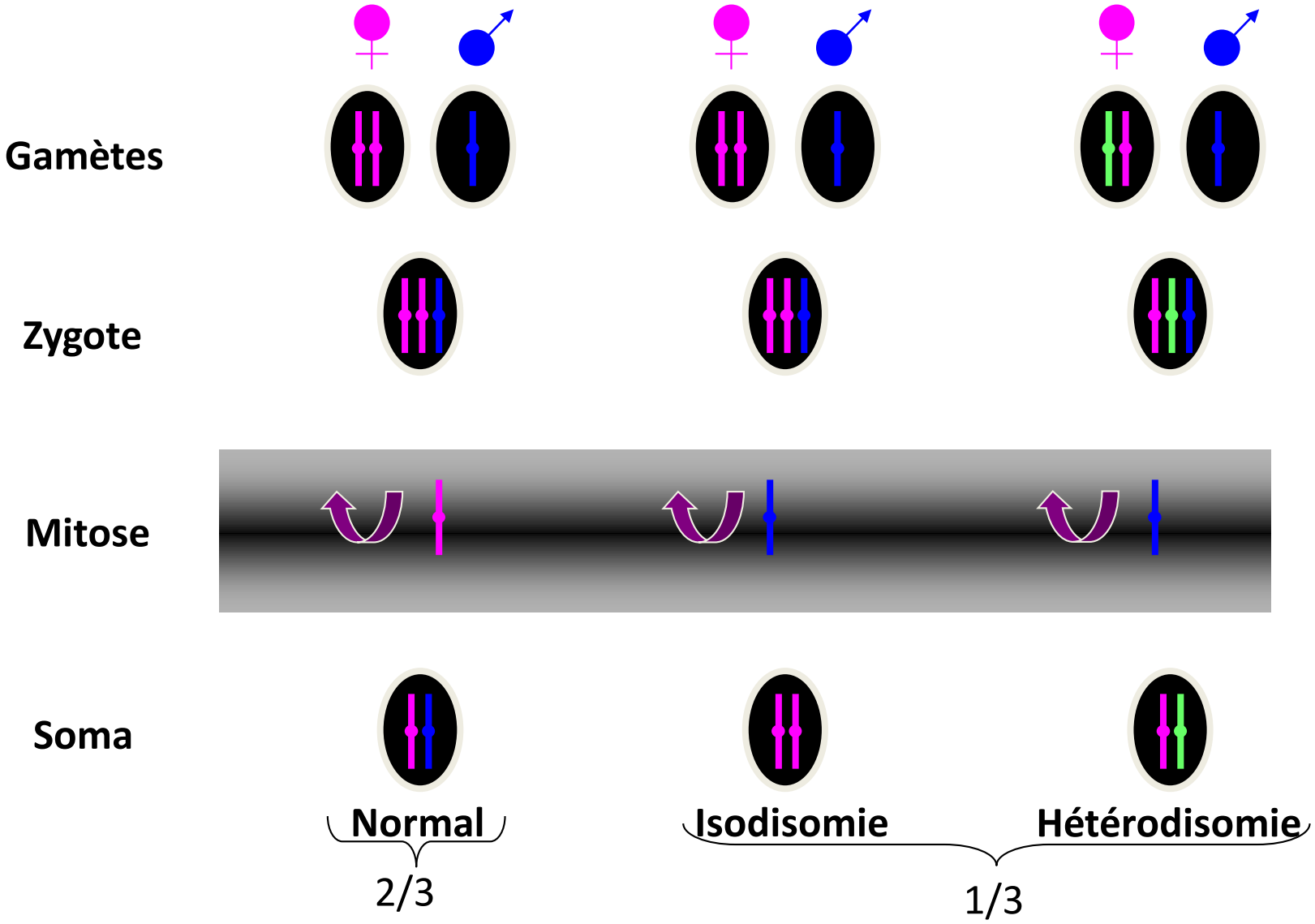
- *Etude 31 placentas à terme RCIU*
- *2 ACLP / 9 RCIU sans étiologie*
- *ACLP associées à RCIU ?*

1. ACLP – définition

2. ACLP – intérêt diagnostique

3. ACLP et DPNI

ACLP méiotiques et risque de disomie uniparentale



Recherche d'une DUP

- **Chromosome 6** (isodisomie paternelle),
- **Chromosome 7** (DUP maternelle : syndrome de Silver-Russel),
- **Chromosome 11** (DUP paternelle : syndrome de Beckwith-Wiedemann),
- **Chromosome 14** (expressions cliniques de sévérité variable),
- **Chromosome 15** (syndromes de Prader-Willi et d'Angelman),
- ~~**Chromosome 16,**~~
- **Chromosome 20**

Del Gaudio D et al., 2020, Genet Med

Am. J. Hum. Genet. 60:917–927, 1997

Meiotic Origin of Trisomy in Confined Placental Mosaicism Is Correlated with Presence of Fetal Uniparental Disomy, High Levels of Trisomy in Trophoblast, and Increased Risk of Fetal Intrauterine Growth Restriction

W. P. Robinson,[1] I. J. Barrett,[2] L. Bernard,[1] A. Telenius,[2] F. Bernasconi,[1] R. D. Wilson,[1,3] R. G. Best,[4] P. N. Howard-Peebles,[5,6] S. Langlois,[1] and D. K. Kalousek[2]

Departments of [1]Medical Genetics, [2]Pathology, and [3]Obstetrics, University of British Columbia, Vancouver; [4]Department of Obstetrics and Gynecology, University of South Carolina, Columbia; [5]Genetics and IVF Institute, Fairfax; and [6]Medical College of Virginia, Richmond

Outcome Compared with Origin and UPD (Cases with Origin of Trisomy Data)

	Outcome		
Origin	IUGR, IUD, Abnormality	Normal	*P*
Meiotic trisomy	17	12	.0003
Somatic trisomy	1	16	
Fetal UPD	14	2	.0000004
Fetal BPD	2	23	
Fetal BPD—meiotic trisomy	2	10	n.s.
Fetal BPD—somatic trisomy	1	13	

Note.—n.s. = not significant.

Littérature autour des ACLP

PubMed.gov

confined placental mosaicism

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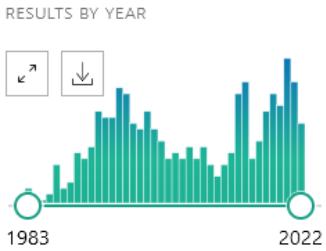
381 results



ACLP et impact sur la grossesse

Authors	No. of cases	No. of controls	Investigated items					Main significant associations
			Pregnancy loss	SGA	Prematurity	Post-natal	Other	
Johnson *et al.*, 1990	49	4264	+	–	–	–		Reduced live births (71% vs 92%)
Breed *et al.*, 1991	26	15	+		+	–		Reduced live births (84% vs 100%)
Wapner *et al.*, 1992	108	10754	+	+	+	–		Reduced live births (91% vs 97%)
Fryburg *et al.*, 1993	39	39	+	+	+	+[b]	+[a]	None
Roland *et al.*, 1994	27	52	+	+	+	–		None
Wolstenholme *et al.*, 1994	73	73	+	–	+			None
Amor *et al.*, 2006[c]	36	195	–	–	+	+[d]		Reduced post-natal growth (mean height 52° vs 64° centile)
Toutain *et al.*, 2010[c]	57	198	+	+	+			Increased number of SGA newborns (39% vs 13%)[e]

Baffero et al., 2012

Grati et al., 2020, Genet Med

Eggenhuizen et al., 2021, Hum Reprod Update

Un consensus.. La trisomie 16

ARTICLE | Genetics inMedicine

Outcomes in pregnancies with a confined placental mosaicism and implications for prenatal screening using cell-free DNA

Francesca Romana Grati, MSc, PhD [1], Jose Ferreira, MD, PhD [2,3,4], Peter Benn, DSc, PhD [5],

Published online: 08 August 2019

Purpose: To assess the association between confined placental mosaicism (CPM) and adverse pregnancy outcome.

Methods: A retrospective cohort study was carried out evaluating the outcome of pregnancies with and without CPM involving a rare autosomal trisomy (RAT) or tetraploidy. Birthweight, gestational age at delivery, fetal growth restriction (FGR), Apgar score, neonatal intensive care admission, preterm delivery, and hypertensive disorders of pregnancy were considered.

Results: Overall 181 pregnancies with CPM and 757 controls were recruited. Outcome information was available for 69% of cases ($n = 124$) and 62% of controls ($n = 468$). CPM involving trisomy 16 (T16) was associated with increased incidence of birthweight <3rd centile ($P = 0.007$, odds ratio [OR] = 11.2, 95% confidence interval [CI] = 2.7–47.1) and preterm delivery ($P = 0.029$, OR = 10.2, 95% CI = 1.9–54.7). For the other RATs, an association with prenatally diagnosed FGR was not supported by birthweight data and there were no other strong associations with adverse outcomes.

Conclusion: Excluding T16, the incidence of adverse pregnancy outcomes for pregnancies carrying a CPM is low. RATs can also be identified through genome-wide cell-free DNA screening. Because most of these will be attributable to CPMs, we conclude that this screening is of minimal benefit.

Genetics inMedicine

Correspondence | Published: 06 November 2019

The clinical benefit of genome-wide cfDNA testing cannot be extrapolated from CVS data

Erik A. Sistermans PhD ✉, Diane Van Opstal PhD, Mireille N. Bekker MD, PhD & Mark D. Pertile PhD

Genetics in Medicine (2019) | Cite this article

Genetics inMedicine

Correspondence | Published: 01 October 2019

Type 3 confined placental mosaicisms excluding trisomies 16 are also associated with adverse pregnancy outcomes

Jérôme Toutain PharmD, PhD ✉, Jacques Horovitz MD & Robert Saura MD

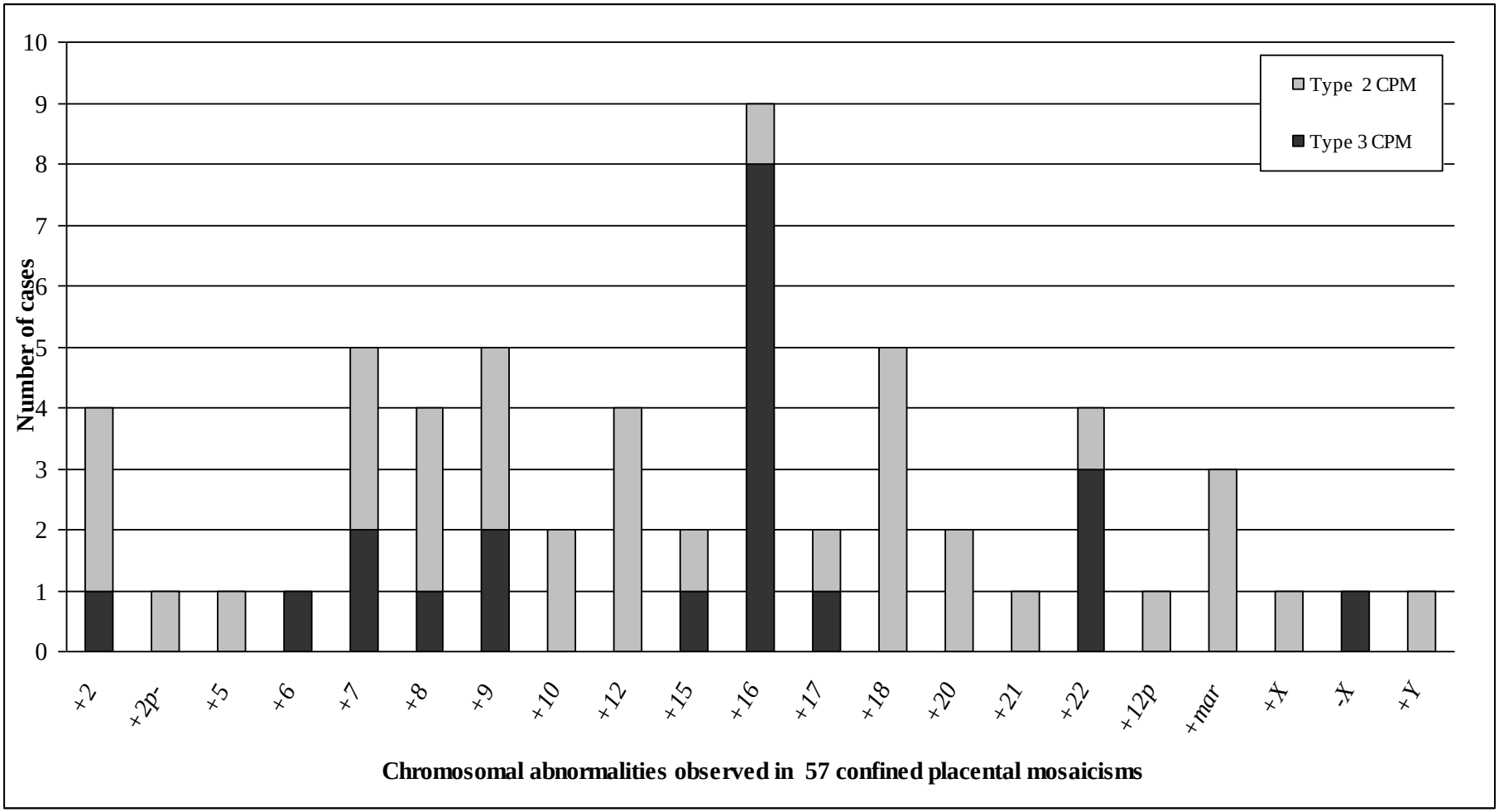
Genetics in Medicine **22**, 446–447(2020) | Cite this article

Etude CHU Bordeaux #1 (1997-2009)

- **13 809 choriocentèses**
- **Culture systématique**
- **<u>Examen direct rétrospectif</u> (type 2 ou 3, Ø type 1)**
- **57 ACLP** : 37 type 2 et 20 type 3
- Contrôle par amniocentèse
- DUP: chromosomes 6, 7, 15 et 16
- Issue de grossesse:
  - *MFIU*
  - *prématurité : < 37 SA*
  - *hypotrophie néonatale (< 10ème, 3ème percentile)*

- Population contrôle: 198 patientes

Distribution des ACLP



Aneuploïdies: 89,5%; anomalies de structure: 10,5%

Type 3: chromosomes 16 et 22

Disomie uniparentale

DUP testée dans 19 cas (19/57 = 33,3% des ACLP)

CPM type	*Patient*	*Chromosome*	*UPD*	*Birth weight (percentile)*	*Pregnancy outcome*
2	6	5	Absent	< 10th	Normal at delivery
2	8	7	Absent	> 10th	Normal at delivery
2	9	7	Absent	_	SA at 17 WA
2	10	7	Absent	N/A	Normal at delivery
2	29	15	Absent	> 10th	Normal at delivery
2	38	16	Absent	N/A	Normal at delivery
3	7	6	Absent	< 3rd	Normal at delivery
3	11	7	Absent	< 3rd	Normal at delivery
3	12	7	Absent	> 10th	Normal at delivery
3	16	8,16	Absent	N/A	N/A
3	21	9	Absent	< 10th	Normal at delivery
3	30	15	Maternal uniparental isodisomy	_	TOP (Prader-Willi syndrome)
3	31	16	Absent	< 3rd	Normal at delivery
3	32	16	Absent	< 10th	Normal at delivery
3	33	16	Maternal uniparental heterodisomy	< 3rd	Normal at delivery
3	34	16	Maternal uniparental heterodisomy	_	IUFD at 35 WA
3	35	16	Maternal uniparental heterodisomy	< 3rd	Normal at delivery
3	36	16	Absent	< 3rd	Death at 4 weeks of life
3	37	16	Absent	< 3rd	Normal at delivery

CPM = confined placental mosaicism; IUFD = intraunterine fetal death; N/A = data not available; SA = spontaneous abortion; TOP = termination of pregnancy; UPD = uniparental disomy; WA = week of amenorrhea.

Type 2: Ø de DUP (0/6)

Type 3: 4/13 = 30,8% des ACLP de type 3

- *1 DUP maternelle 15 (Σ Prader-Willi)*
- *Absence d'influence de la DUP 16*

Issue de la grossesse

Caractéristiques de la grossesse	Population contrôle (n = 198)	ACLP de type 2 et 3 (n = 57)	p-value	ACLP de type 2 (n = 37)	p-value	ACLP de type 3 (n = 20)	p-value
Terme (SA) (moyenne ± ET)	39,0 ± 2,14	38,3 ± 3,02	NS	39,5 ± 1,47	NS	35,7 ± 3,77	p<0,0001
Prématurité (n, %)	21/191 (11,0)	8/50 (16,0)	NS	1/34 (2,94)	NS	7/16 (43,7)	p<0,01
Poids de naissance (gr) (moyenne ± ET)	3 211 ± 575	2 823 ± 894	p<0,01	3 244 ± 530	NS	1 954 ± 875	p<0,0001
Hypotrophie néonatale (n, %)	25/191 (13,1)	19/49 (38,8)	p<0,001	6/33 (18,2)	NS	13/16 (81,2)	p<0,0001
Hypotrophie néonatale sévère (n, %)	6/191 (3,14)	10/49 (20,4)	p<0,001	1/33 (3,03)	NS	9/16 (56,2)	p<0,0001
Sexe (n, % garçons)	101 (51,0)	27 (47,4)	NS	17 (45,9)	NS	10 (50,0)	NS
Issue de grossesse défavorable (n, %)	8 (4,04)	5 (8,77)	NS	1 (2,70)	NS	4 (20,0)	p<0,05

ACLP : anomalie chromosomique limitée au placenta ; ET : écart-type ; SA : semaine d'aménorrhée.

Issue de la grossesse

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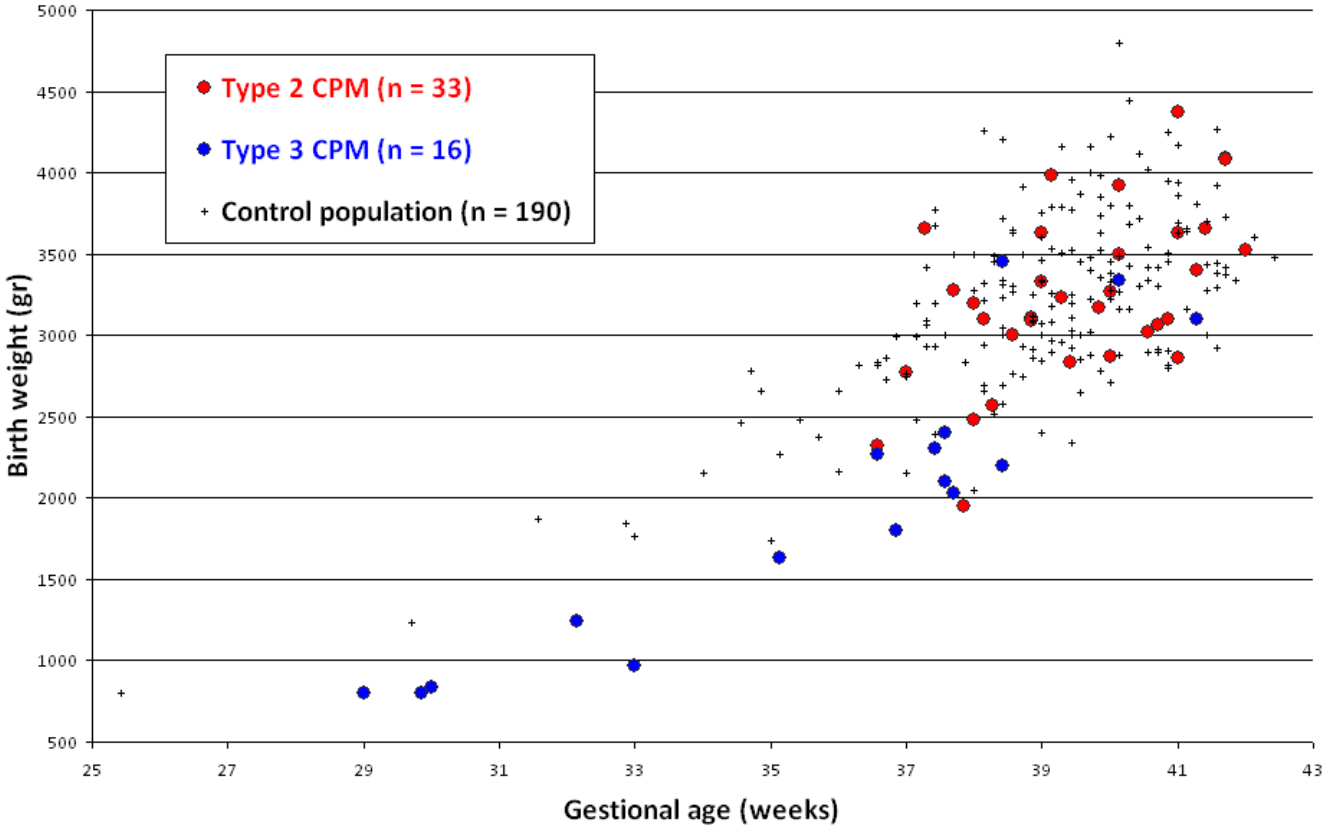
ACLP : anomalie chromosomique limitée au placenta ; ET : écart-type ; SA : semaine d'aménorrhée.

ACLP de type 3 associées à prématurité, hypotrophies néonatales et MFIU

Confined placental mosaicism and pregnancy outcome: a distinction needs to be made between types 2 and 3

Jérôme Toutain[1,2]*, Cécile Labeau-Gaüzere[2,3], Thomas Barnetche[4], Jacques Horovitz[2,3] and Robert Saura[1,2]

Prenat Diagn 2010; **30**: 1155–1164.



Type 3 CPM associated with prematurity, neonatal hypotrophy & IUFD

Review: Cell-free fetal DNA in the maternal circulation as an indication of placental health and disease

E.S. Taglauer [a], L. Wilkins-Haug [b], D.W. Bianchi [c,*]

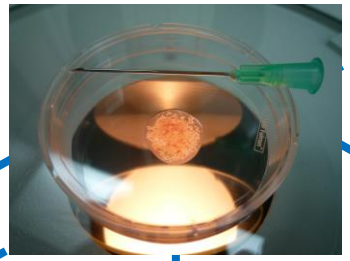
[a] Department of Pediatrics, Floating Hospital for Children, Boston, MA, USA
[b] Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Brigham and Womens' Hospital, Boston, MA, USA
[c] Mother Infant Research Institute at Tufts Medical Center and Floating Hospital for Children, 800 Washington Street, Box 394, Boston, MA 02111, USA

Placenta 35, Supplement A, Trophoblast Research, Vol. 28 (2014) S64–S68

layers, respectively [46]. When CPM is present, higher rates of fetal growth restriction, pregnancy loss, and hypertension have all been reported [47–50]. There is controversy as to whether the type of CPM, the specific chromosome involved, or the extent of abnormal placental cell lines contributes disproportionately to the risk of adverse pregnancy outcomes [49,51]. In approximately one-third of

As more pregnant women undergo NIPT, we may be able to detect a higher percentage of CPM in the future. Increased diagnosis of CPM could unveil a previously unrecognized etiology for unexplained growth restriction, pregnancy loss and or gestational hypertension.

Study #2: From 2009 to 2015 (5,512 patients)



Array-CGH

iFISH

LTC SYSTEMATICALLY
IN CASE OF SUSPICION OF CPM → STC RETROSPECTIVELY
(type 2 or 3 CPM, Ø type 1 CPM)

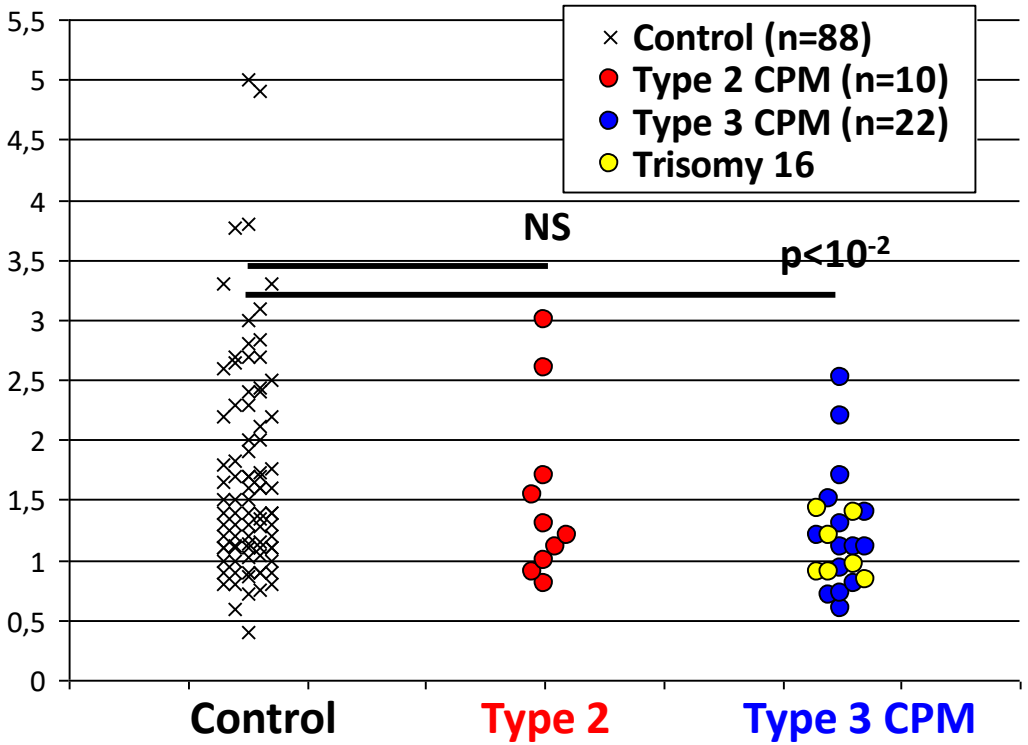
Amniocentesis ± uniparental disomy

- NT, PAPP-A, (ART)
- Pregnancy outcome (IUFD, prematurity, neonatal hypotrophy)
- Control population (93 patients)

36 CPM (36/5512=**6.53‰**): 13 type 2 & 23 type 3

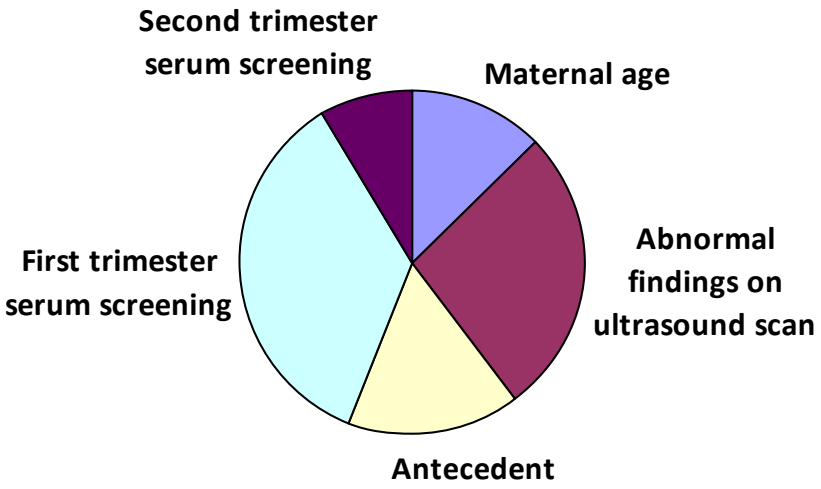
Pregnancy characteristics	Control population (n = 93)	Type 2 and 3 CPM (n = 36)	P value	Type 2 CPM (n = 13)	P value	Type 3 CPM (n = 23)	P value
Maternal age (years) (mean ± sd)	34 ± 6	34 ± 6	NS	35 ± 6	NS	34 ± 6	NS
Pregnancy obtained after ART (%)	5.38	8.33	NS	7.69	NS	8.70	NS

Nuchal translucency (mm)

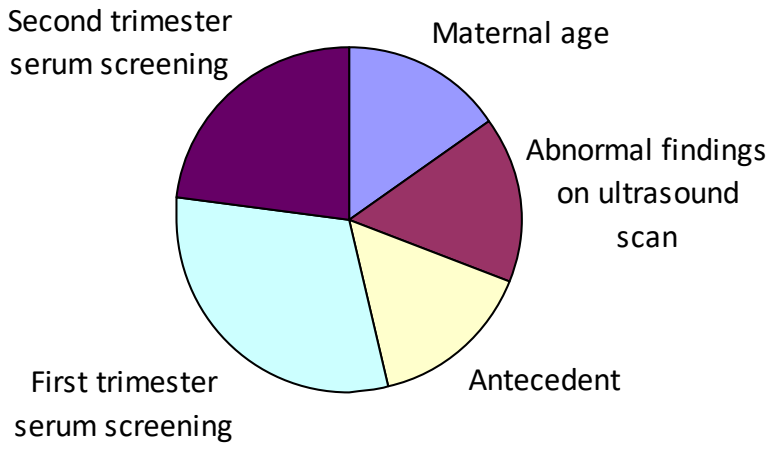


Prenatal diagnosis indications (%)

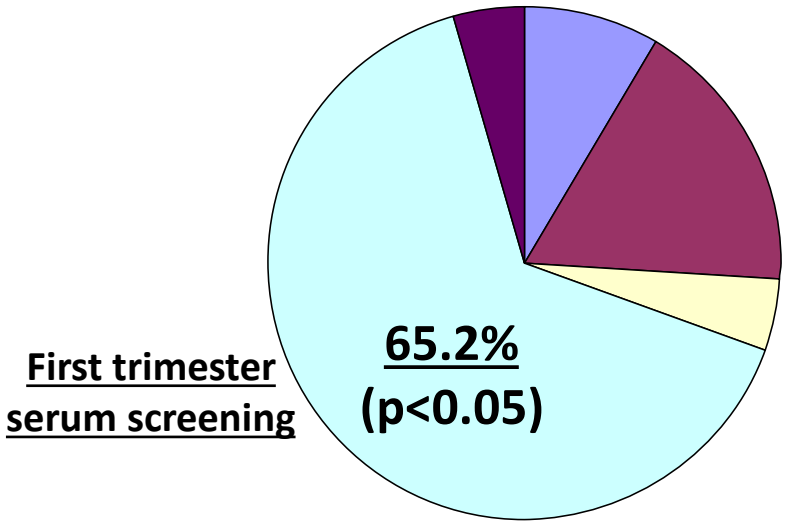
Control population (n=93)



Type 2 CPM (n=13)



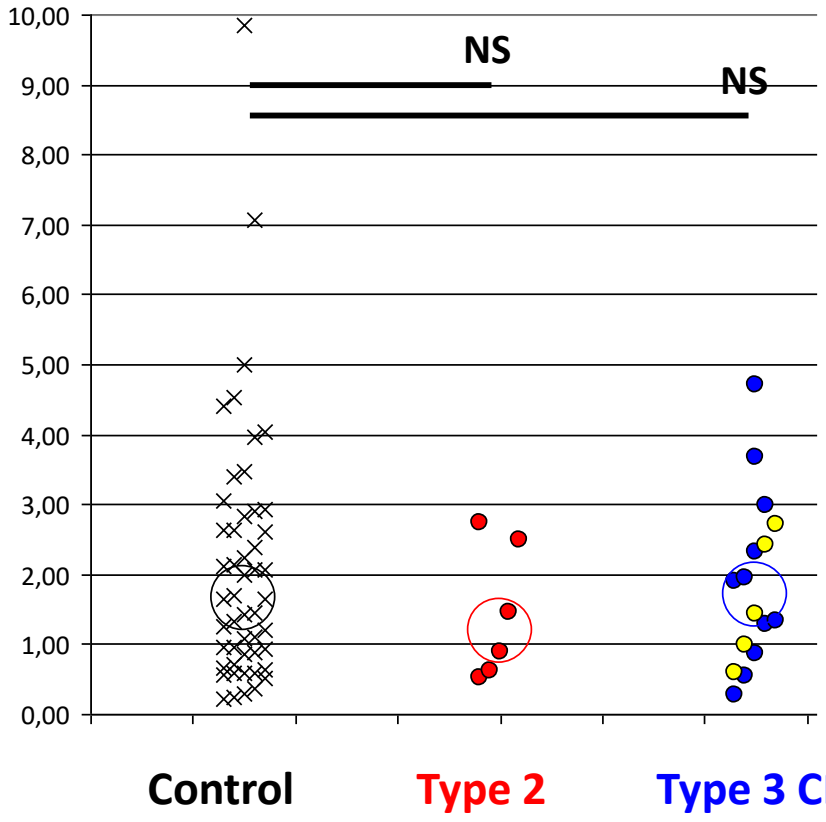
Type 3 CPM (n=23)



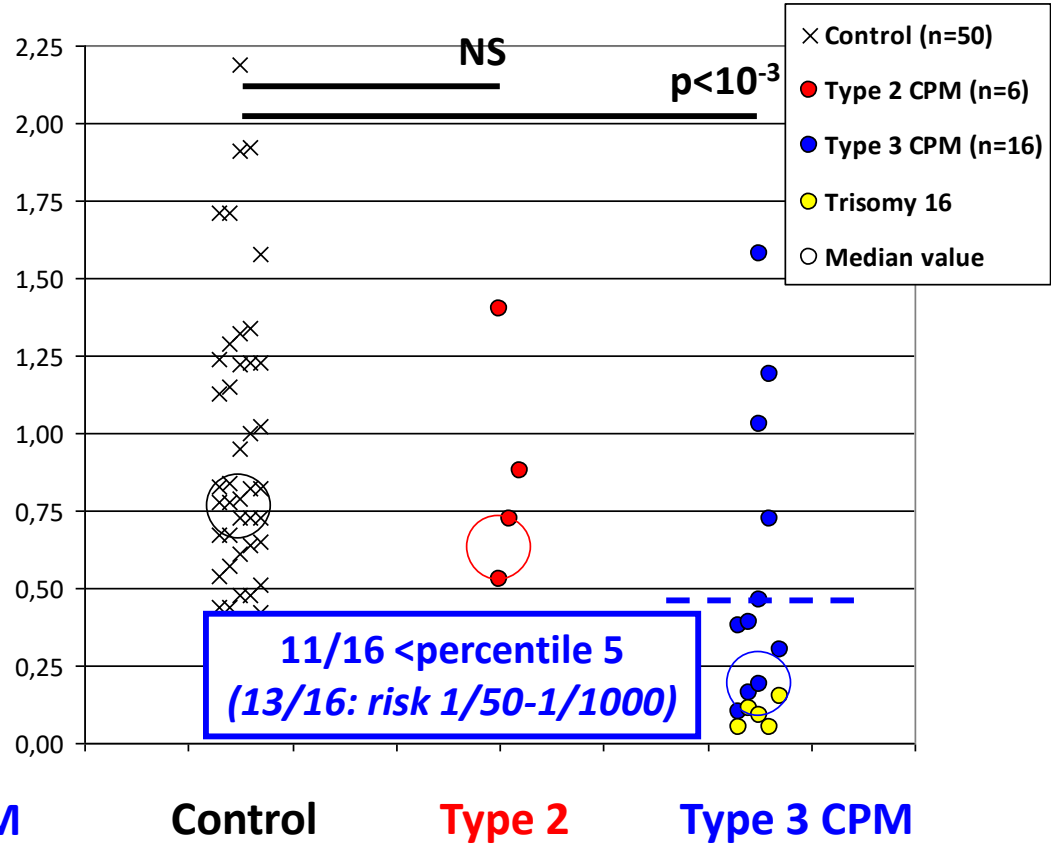
First trimester serum screening

Distribution of free β-hCG & PAPP-A values

Free β-hCG (MoM)



PAPP-A (MoM)

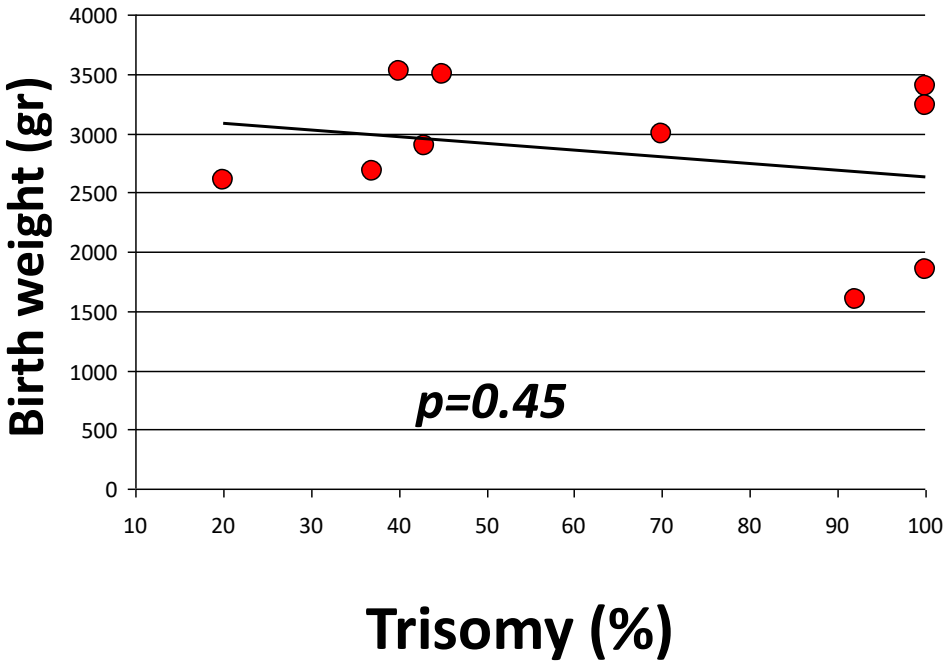


Fetal growth & pregnancies outcomes

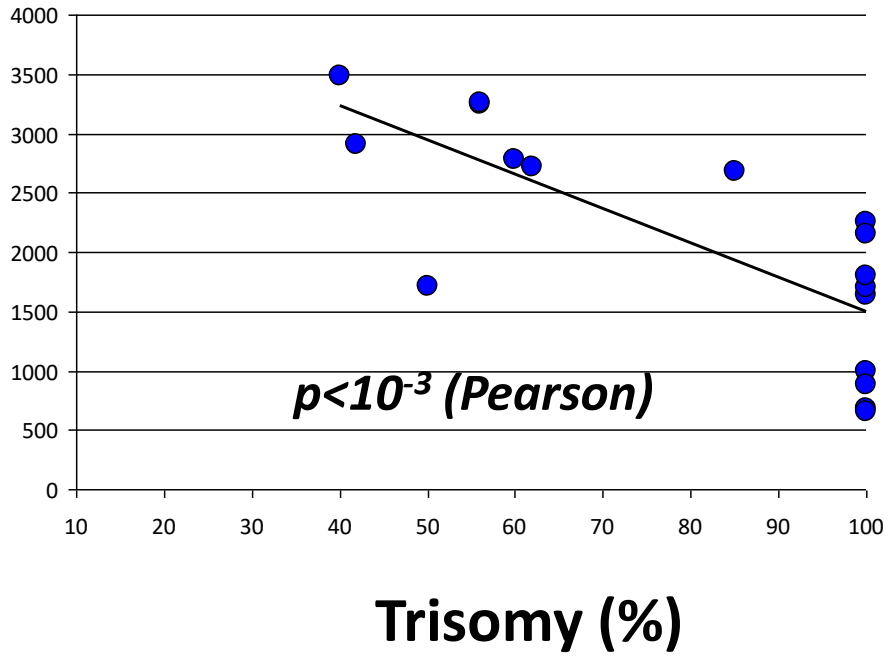
	Control population (n = 93)	Type 2 and 3 CPM (n = 36)	P value	Type 2 CPM (n = 13)	P value	Type 3 CPM (n = 23)	P value
Intrauterine growth restriction (%)	18.3	57.6	<0.01	15.4	NS	**77.3**	<0.001
Gestational age (WA) (mean±sd)	39.4±2	36.3±4	<0.001	38.5±3	NS	**35.3±4**	<0.001
Neonatal hypotrophy (%)	17.1	53.8	<0.001	20.0	NS	**73.7**	<0.001
Severe neonatal hypotrophy (%)	6.10	26.9	<0.01	0	-	**36.8**	<0.001
Intrauterine fetal death, stillbirth (%)	3.57	11.1	0.08	0	-	**17.4**	<0.05

Birth weight
& percentage of trisomy after LTC

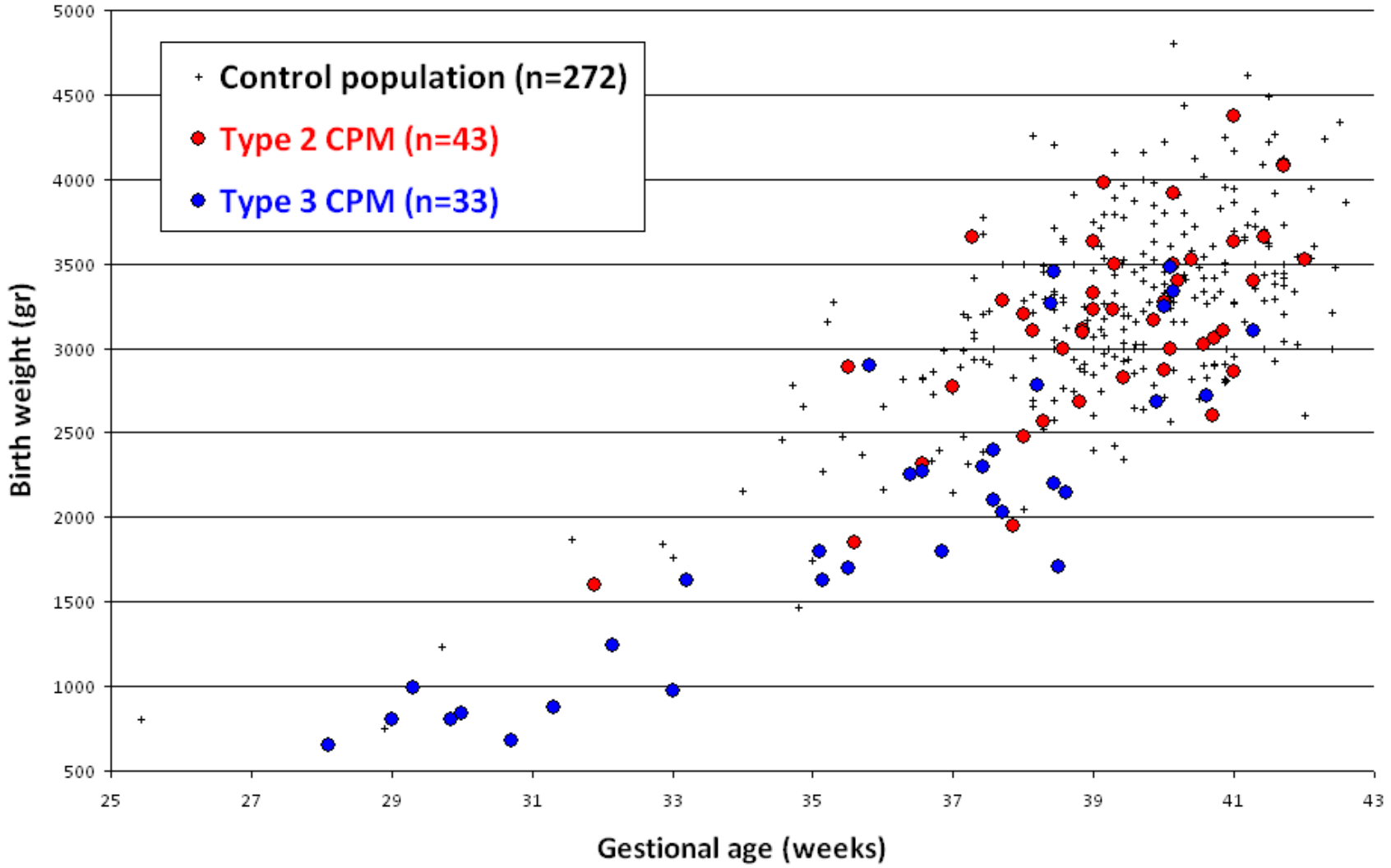
Type 2 CPM



Type 3 CPM



Study #1 & #2 (1997 to 2015):
(57+36)/(13,809+5,512)=93/19,321 (≈5‰)



- No association between NT and CPM

- Low PAPP-A levels for type 3 CPM

  → 11/16=**68.7% < 5th percentile**

- Unexplained IUGR: CVS
  - ***Type 3 CPM**: 43/19,321= **0.22%***
  - *~75% with IUGR (even in excluding T16, 77% neonatal hypotrophies)*

  → *~2-3% of IUGR caused by CPM*

- Association with preeclampsia ?
- Physiopathology of IUGR consecutive to CPM ?

PLoS One, 2018
Genet Med, 2020

Pré-éclampsie

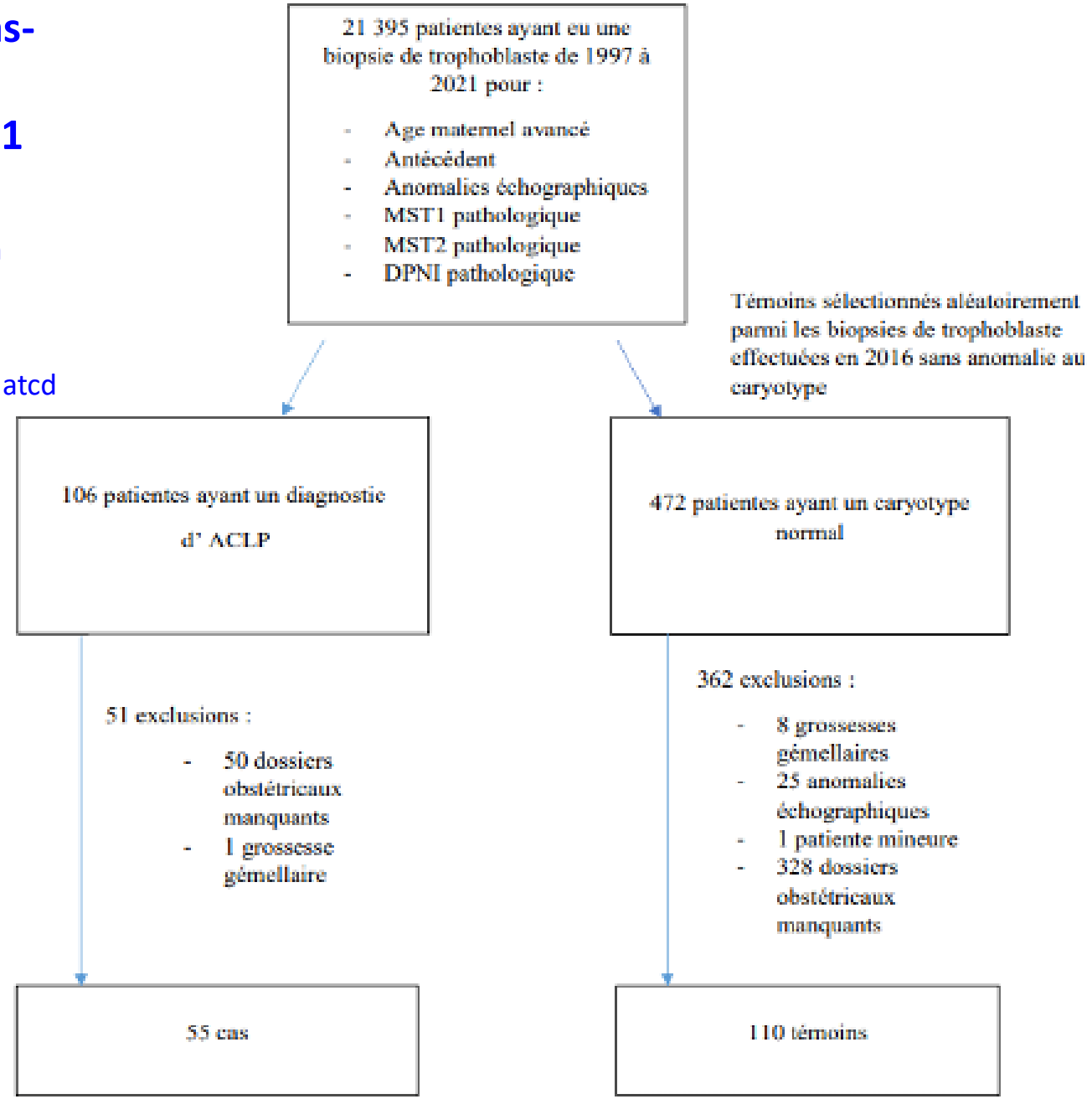
Etude rétrospective cas-témoin au CHU de Bordeaux, 1997 à 2021

M. Medici, A Mattuizzi, J Toutain

Groupes comparables sauf pour atcd RCIU:

6/55 (10,9%) vs 2/110 (1,8%)

P=0.02



N = 165	Cas N = 55	Témoins N = 110	p
Complications obstétricales			
Pré-éclampsie *n (%)*	6 (10,9)	6 (5,5)	0,21
RPM < 37 SA *n (%)*	3 (5,5)	6 (5,5)	1
Accouchement			
Terme en SA *médiane [IQR]*	37,4 [31,5-39,4]	39,5 [38,1-40,8]	< 0,01
Prématurité *n (%)* **	19 (40,4)	13 (11,9)	< 0,01
Voie d'accouchement : césarienne *n (%)*	22 (40) [a]	24 (21,8)	0,02
HPPI *n (%)*	6 (10,9)	3 (2,7)	0,06

	ACLP de type 2 N = 22	Témoins N = 110	p
Complications obstétricales			
Pré-éclampsie *n (%)*	–	6 (5,5)	0,58
RPM < 37 SA *n (%)*	1 (4,6)	6 (5,5)	1
Accouchement			
Terme en SA *médiane [IQR]*	39,1 [35,5-40]	39,5 [38,1-40,8]	0,3
Prématurité *n (%)* **	4 (20)	13 (11,9)	0,3
Voie d'accouchement : césarienne *n (%)*	7 (31,8)	24 (21,8)	0,4
HPPI *n (%)*	1 (4,6)	3 (2,7)	0,52

	ACLP de type 3 N = 33	Témoins N = 110	p
Complications obstétricales			
Pré-éclampsie *n (%)*	6 (18,2)	6 (5,5)	0,03
RPM < 37 SA *n (%)*	2 (6,1)	6 (5,5)	1
Accouchement			
Terme en SA *médiane [IQR]*	34,4 [29-38]	39,5 [38,1-40,8]	< 0,01
Prématurité *n (%)* **	15 (55,6)	13 (11,9)	< 0,01
Voie d'accouchement : césarienne *n (%)*	15 (45,4)	24 (21,8)	0,01
HPPI *n (%)*	5 (15,2)	3 (2,7)	0,02

- 6 cas de PE (6/55, 11%) dans le groupe ACLP,
- 6 cas de PE observés uniquement pour les ACLP de type 3 (6/33, 18%) et composés de 3 T16, 1 T15, 1 T7, 1 T22

1. ACLP – définition

2. ACLP – intérêt diagnostique

3. ACLP et DPNI

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RESEARCH LETTER

PRENATAL DIAGNOSIS WILEY

Noninvasive prenatal testing as compared to chorionic villus sampling is more sensitive for the detection of confined placental mosaicism involving the cytotrophoblast

What's already known about this topic?

- Confined placental mosaicism (CPM) can prenatally be detected with chorionic villus sampling (CVS) and noninvasive prenatal testing (NIPT).
- Chromosomally abnormal cells may be restricted to a small part of the placenta.
- The level of mosaicism detected by CVS does not always reflect the level present in the term placenta.

What does this study add?

- NIPT as compared to CVS is more sensitive for detection of CPM involving the cytotrophoblast that is restricted to a (small) part of the placenta.

PREGNANCY

30 August 2017

Rare autosomal trisomies, revealed by maternal plasma DNA sequencing, suggest increased risk of feto-placental disease

Mark D. Pertile,[1,2]* Meredith Halks-Miller,[3,4]* Nicola Flowers,[1] Catalin Barbacioru,[4] Sarah L. Kinnings,[3] Darcy Vavrek,[3] William K. Seltzer,[3] Diana W. Bianchi[5,6]†

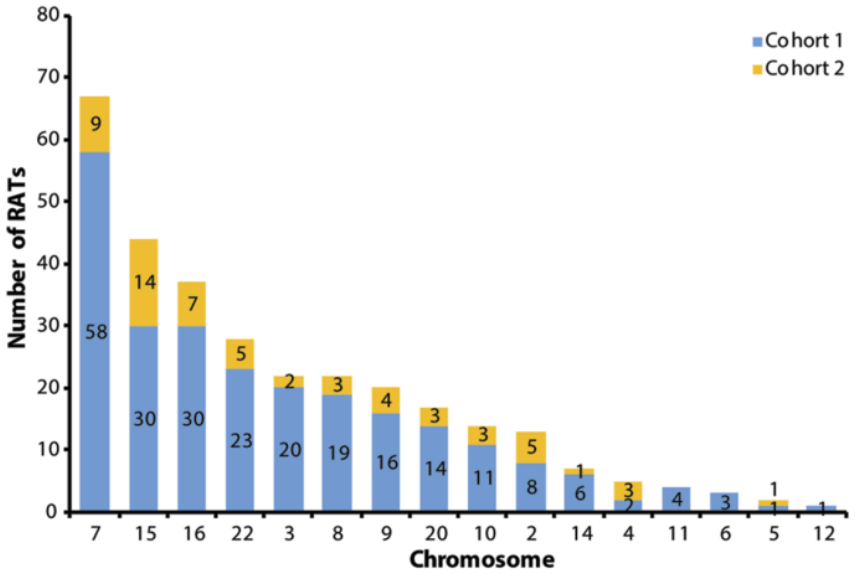
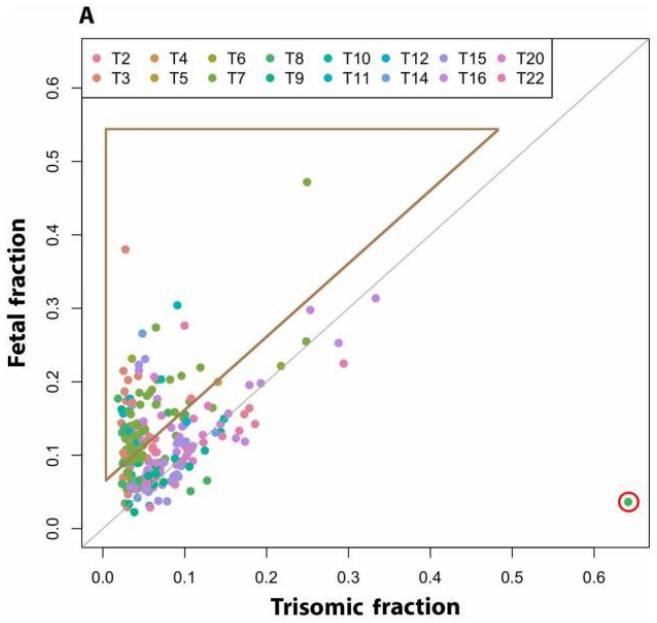


Fig. 3. Bar graph indicating the absolute numbers of single RATs observed in both cohorts. The chromosome number is shown on the *x* axis. No trisomies were observed for chromosomes 1, 17, and 19, so they are not included in the figure.



Comparing the trisomic fraction with the fetal fraction allowed estimation of possible mosaicism.

At the present time, most laboratories do not clinically report RATs. These clinical outcome data demonstrate that the presence of a RAT, particularly at a proportion similar to the fetal fraction, was frequently associated with serious pregnancy complications. For this reason, we recommend that patients should be given the option of receiving test results from all chromosomes. Analysis of maternal cfDNA is essentially a liquid biopsy of the placenta. Further research is needed to determine the full clinical utility of reporting autosomal aneuploidy for any chromosome.

The American Journal of Human Genetics *109*, 1140–1152, June 2, 2022

ARTICLE

Clinical impact of additional findings detected by genome-wide non-invasive prenatal testing: Follow-up results of the TRIDENT-2 study

Lisanne van Prooyen Schuurman, Erik A. Sistermans, Diane Van Opstal, ..., Merryn V.E. Macville, Robert-Jan H. Galjaard, The Dutch NIPT consortium

- 2017-2019: 149 318 grossesses à « bas risque »
  - *DPNI ciblé ou WG - 110 739 WG (74,2%)*
- 402 anomalies autres que T13, 18, 21: 1/275, 35,5% (402/1 132) des anomalies dépistées,
  - *Origine fœtale (22,1%) / placentaire (52,8%) / maternelle (25,1%)*
- 189 ACLP « présumées » (189/110 739, **0,17%**)
  - *PE: 8,5% (16/189) vs 0,5% (754/159 924)*
  - *Prématurité: 12,4% (22/177) vs 5,8% (8 784/150 471)*
  - *Hypotrophies néonatales sévères: 13,6% (24/177) vs 2,5% (3 892/155 491)*
- Issues de grossesse défavorables, même en l'absence de T16
- Suivi obstétrical adapté recommandé (croissance fœtale et contrôle placenta, prophylaxie PE par aspirine)

European Journal of Human Genetics (Juin 2022)

REVIEW ARTICLE

Check for updates

Rare autosomal trisomies detected by non-invasive prenatal testing: an overview of current knowledge

Lore Lannoo[1], Khaila van Straaten[2], Jeroen Breckpot[3], Nathalie Brison[3], Luc De Catte[1], Eftychia Dimitriadou[3], Eric Legius[3], Hilde Peeters[3], Ilse Parijs[3], Olga Tsuiko[3], Leen Vancoillie[3], Joris Robert Vermeesch[3], Griet Van Buggenhout[3], Kris Van Den Bogaert[3], Kristel Van Calsteren[1] and Koenraad Devriendt[3]✉

RECOMMENDATIONS FOR FURTHER RESEARCH ON THE DIFFERENT RATS DETECTED BY NIPT

→ Molecular studies about the origin (meiotic/mitotic)

Assessing the risk of fetal mosaicism in low risk populations

What is the value of CVS versus amniocentesis to exclude fetal mosaicism

Is there a correlation between the level of mosaicism by NIPT and the risk of fetal involvement

→ Is confined placental mosaicism for each different RAT a risk factor for adverse pregnancy outcome?

→ Is there a correlation between the level of placental mosaicism by NIPT and adverse pregnancy outcome?

What is the long term developmental outcome of fetal mosaicism and the correlation with the level of mosaicism?

What proportion of trisomy 14,15 and 22 is due to a "inherited" Robertsonian translocation.

Conclusion

- ACLP: rares (<1%)
- Intérêt diagnostique controversé (hors T16)
- ACLP de type 3 - origine méiotique++ (≈10% des ACLP)
  - *DUP*
  - *RCIU*
  - *PE*
  - *Surveillance obstétricale adaptée*
- DPNI: sensibilité++ (ACLP types 1 et 3)
  - *Fraction trisomique DPNI ?*
- Etudes prospectives (ACLP/TFM)
- Quel contrôle en cas de suspicion ACLP au DPNI ?

Remerciements

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Service de génétique médicale
Laboratoire de cytogénétique

Pr Robert SAURA
Marie, Maud, Natacha, Perrine, Simon, Solène, Sophie, Valérie

CHU BDX — CENTRE HOSPITALIER UNIVERSITAIRE BORDEAUX

CDD - 4 Mois | Contractuel
Catégorie A | Médico-technique
Temps plein

Niveau d'expérience requis
Débutant accepté

Prise de poste
02/10/2023

LE POSTE

Dans le respect des normes d'assurance qualité et des règles d'hygiène et de sécurité, le TLM du laboratoire de cytogénétique réalise des examens de biologie médicale. Il participe au rendu des résultats en garantissant la maitrise de toutes les étapes du processus d'analyse et les conditions de sa réalisation. Le laboratoire de cytogénétique est ouvert du lundi au vendredi. Le temps de travail journalier est de 7h.

Il a pour mission de :

- Prendre en charge la phase pré-analytique des échantillons de liquide amniotique, de villosités choriales et de peau : vérification de l'identité, enregistrement des échantillons sur DEFGEN;
- Réalise la mise en culture des prélèvements de liquide amniotique, de villosités choriales et de peau en vue d'un diagnostic prénatal
- Vérifier les cultures de villosités choriales au microscope inversé et effectuer les rinçages si nécessaire ;
- Préparer les villosités choriales au tri et répartir les prélèvements sous PSM2 en vue des différentes techniques ;
- Réaliser la technique des directs permettant l'obtention de métaphases à partir de villosités choriales non cultivées ;
- Effectuer la lecture de caryotypes avec les logiciels Metaclient et Ikaros ;
- Participer à la gestion des stocks et des consommables ;
- Respecter les règles d'hygiène et de sécurité ;
- Participer aux réunions du laboratoire ;
- Participer à la démarche qualité au sein du laboratoire et du pôle de biologie-pathologie.