11th Postgraduate Course for Training in Reproductive Medicine and Reproductive Biology
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PREDICTORS IN PRETERM BIRTH

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INTRODUCTION:

- Definition of preterm birth
- Prevalence of preterm birth
- Neonatal mortality and related morbidity
- Aetiology of preterm birth
- Importance of predictors in preterm birth

OBJECTIVES:

- Report the most cited predictors in preterm birth
- Discuss grades of evidence in these methods

METHODOLOGY:

- Medline search using words ‘ preterm ’ and ‘ birth ’
- Screen titles and abstracts in predictors of preterm birth
- Analyse articles to assess the quality of evidence available for each predictor in preterm birth

Levels of evidence according to the Scottish Intercollegiate Guidelines Network

BMJ 2001;323:334-6

1++ High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias.

1+ Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.

1- Meta-analyses, systematic reviews or RCTs, or RCTs with a high risk of bias.

2++ High quality systematic reviews of case-control or cohort studies or High quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal

2+ Well conducted case-control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal

2- Case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal

3 Non-analytic studies, eg case reports, case series

4 Expert opinion

RESULTS: predictors described

1. History

2. Maternal perception of symptoms and signs

3. Clinical examination

4. Home uterine activity monitoring

5. Biochemical markers
   - Interleukin-6
   - Fœtal fibronectin

6. Imaging methods
   - Ultrasound
   - Magnetic Resonance Imaging

1. History

- Mercer et al.(1996)

Risk assessment system
using clinical information at 23 to 24 weeks gestation

Prospective study of 3073 women.

	multiparous	nulliparous
Sensitivity	24,2 %	18,2 %
P.P.V.	28,6 %	33,3%

1. History

Risk score systems have a limited value in prediction of preterm birth

- High quality cohort study with very low risk of confounding, bias and high probability that relationship is causal.

- Grading of evidence: 2++

2. Maternal perception of symptoms and signs

- Cooper et al.(1990)

Prospective study in a high risk population
352 women selected from indigent population

Symptoms have little value in predicting preterm labor
and spontaneous delivery

Well conducted cohort study with low risk of
confounding, bias and a moderate probability that the relationship is causal.

Grading of evidence: 2+

3. Clinical cervical exam:

- Buekens et al.(1994)

Evaluation of cervical examination

R.C.T.- 2803 women: cervical exam every prenatal visit
- 2799 women: avoid cervical exam

Preterm birth rates are not modified by cervical exam

- RCTs with a low risk of bias

- Grading of evidence: 1+

4. Home uterine activity monitoring:

Involves tocodynamometry and contact with nursing staff.

- Colton et al.(1995)

Meta-analyses from six RCTs of home uterine activity monitoring in high risk pregnancies.

Associated with reductions of preterm birth in singleton pregnancies and reduction of risk in preterm labour combined with cervical dilatation > 2 cm.

- Well conducted meta-analyses

- Grading of evidence: 1+

5. Laboratory methods: Amniotic Fluid Interleukin-6

- Bastawissi et al.(2000)

Review to evaluate the role of amniotic fluid interleukin-6
12 cross-sectional studies and 1 prospective study

Elevated AF Il-6 leves are associated with preterm labour and birth in the absence of apparent clinical infection

- High quality systematic reviews of case-control or cohort studies

- Grading of evidence: 2++

5. Laboratory methods: Fœtal fibronectin

- Leitich et al (1999) Meta-analysis.

High risk pregnancies: Sensitivity 78% Specificity 78%
Low risk pregnancies: Sensitivity 43% Specificity 84%

- Faron et al (1998) Meta-analysis.

High and low risk population: foetal fibronectin in cervicovaginal secretions is related with preterm birth

•High quality meta-analysis

•Grading of evidence: 1++

6. Imaging methods:
Cervical length by Trans-vaginal ultrasound:

- Leitich et al (1999). Review of prospective studies.
Cervical length of 30 mm or a dilatation of internal cervical os will identify 80% to 100% of women who will have a preterm delivery

- Venditelli et al (2000). Systematic review of cohort and case control studies
Sensitivity 68% to 100% and specificity 30% to 78 %

- High quality systematic reviews of case-control or cohort studies

- Grading of evidence: 2++

6. Imaging methods
Magnetic Resonance Imaging

• Chan et al (1998).
Relationship between gestational age, time interval to delivery and cervical assessment by magnetic resonance imaging

A higher signal intensity in the cervical stroma is associated with a shorter time interval to delivery.

•Observational cross-sectional study

• Grading of evidence: 3

Predictor	Autor (ref.)	Level of evidence
History	Mercer et al. (1)	2++
Maternal perception of symptoms	Copper et al. (12)	2+
Clinical exam	Buekens et al. (15)	1+
Home Uterine Activity Monitoring	Colton et al. (27)	1+
Interleukin-6	Bastawissi et al. (30)	2++
Foetal Fibronectin	Leitich et al. (37)	1++
	Faron et al. (38)	1++
Vaginal ultrasound	Leitich et al. (39)	2++
	Vendittelli et al. (46)	2++
Magnetic Resonance Imaging	Chan et al. (48)	3

DISCUSSION:

- There is good evidence that cervical evaluation with vaginal ultrasound, cervico vaginal fœtal fibronectin and interleukin-6 are good predictors of preterm birth.

- There is quite good evidence that clinical cervix examination is not a good predictor of preterm birth.

DISCUSSION:

- The literature disagree about results and studies in home uterine activity monitoring

- There is good evidence that history and risks systems are not good predictor of preterm birth

- The knowledge about maternal perception of symptoms is insufficient to recommend their use

Conclusion

More research is needed !