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Varicella and pregnancy

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Varicella in pregnancy

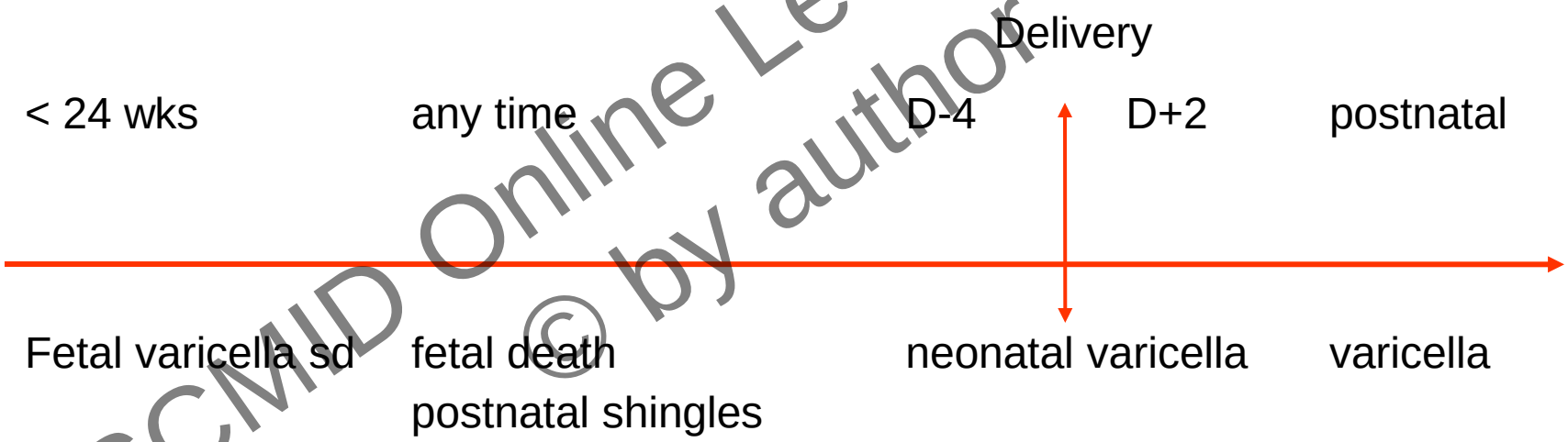
- Incidence on the order of 1 per 1000 pregnancies
- In temperate climates > 95% adult women protected
- Risk for the woman : severe varicella pneumonia < 1%
- Risks for child : Fetal varicella, Neonatal varicella
- Zoster : no risk for fetus
- Accidental vaccination : no major risk for fetus

Chickenpox : a clinical diagnosis

Risk for the mother

- Varicella pneumonia :
  - Incidence 1% as in non-pregnant
  - But higher risk of ARDS
- Mortality in varicella ARDS :
  - 20 to 45% before antivirals
  - 3 to 14% with antivirals

Varicella in pregnancy : perinatal risk



Breastfeeding

- Risk of postnatal contact with mother during acute varicella
- Breastfeeding is safe following postnatal vaccination
- After VZV vaccination, breast milk samples have failed to show any VZV DNA.

Neonatal varicella

- From C.K. Smith, A.M. Arvin. Seminars in Fetal & Neonatal Medicine (2009)
- Neonate with varicella acquired from the mother in perinatal period
- Classical skin lesions, pneumonia, hepatitis, encephalitis and severe coagulopathy resulting from liver failure and thrombocytopenia

Neonatal varicella

- May occur when maternal disease occurs within an 1-wk period from 5 days before delivery until 2 days after delivery
- Prevention at birth with VZIG (or IVIG if VZIG not available)
- Incidence decreased from 30% to 7% with VZIG was introduced

Fetal varicella

- Infection maternelle entre 8 et 21 (24) SA
- Risque varicelle fœtale env. 1%
- Rare car incidence varicelle ≤ 1 p mille grossesses

Congenital varicella incidence

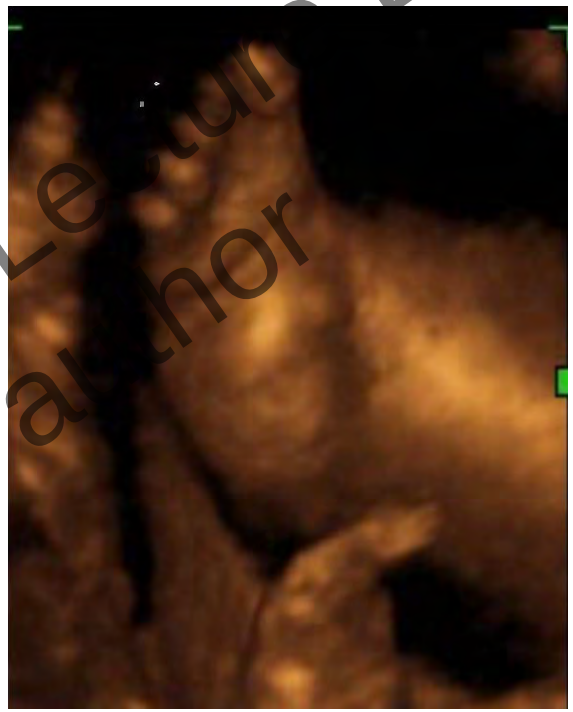
Incidence (%)	Enders 1994	IPP 2000	
	Retrospective	Prospective	1300
infants	358 prenatal diagnoses		
Asymptomatic	12	5,6	
Embryopathy	0,7	1,4	
Postnatal zoster	0,8	1,1	

Fetal varicella lesions

- Skin : vesicles, scarring, retractions
- Bones : Hypoplasia of limb
- Neurologic : Microcephalus, cranial nerve paralysis, bladder, Claude-Bernard. Horner Syndrome
- Eyes : Microphtalmia, optic nerve atrophy, corneal opacity, cataract, chorioretinitis
- Other : Intrauterine gowth retardation (IUGR)

Case study 1

- Maternal varicella at 14 wks
- Transient pylectasis
- Talipes
- VZV PCR +



- Polyhydramnios and labor at 34 wks
- Abnormal CTG
- Neonatal death
- VZV encephalitis

Case study 2

- Maternal varicella at 17 wks
- Amniocentesis PCR+
- Transient hyperechogenic intestin
- Ultrasound follow-up and MRI normal
- No prenatal treatment

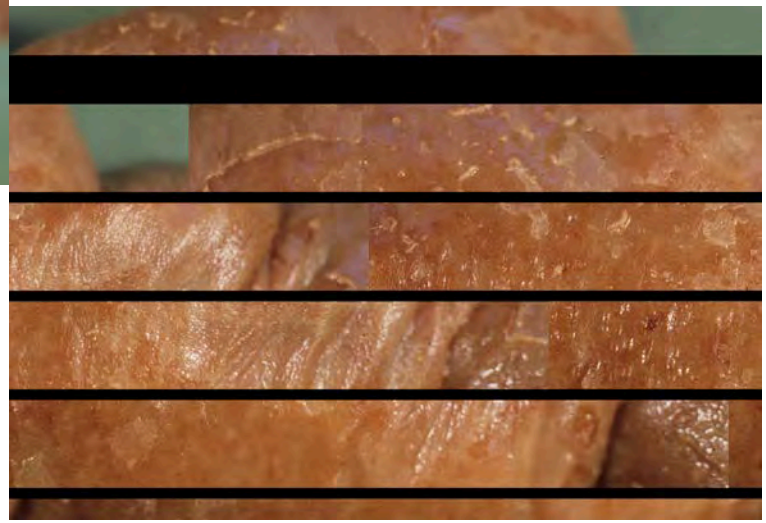
- At birth : inguinal ulceration and muscle dehiscence
- After treatment and graft at 6 months

Hypoplasia of the right cerebellar hemisphere

Neonatal coronal T2-weighted MRI

Verstraelen, Prenat Diagn 2003

Case of VZV causing in utero demise



- Connan et al. EJOG 1996
- (photos courtesy A Berrébi)

Fetal VZV causing postnatal zoster

Infant aged 14 months with herpes zoster in the classic dermatomal pattern

Maternal history of varicella at 28 weeks of pregnancy.

C.K. Smith, A.M. Arvin. Seminars in Fetal & Neonatal Medicine (2009)

Table 1 **Principal signs and symptoms of fetal varicella syndrome ($n = 96$ children) literature review.[2] Each child could have one or more symptom**

Symptoms	Proportion of children (%)
Skin lesions (scars, skin loss)	76
Neurologic damage (cortical atrophy, spinal atrophy, limb paresis, seizures, microcephaly, Horner's syndrome, encephalitis, dysphagia)	60
Eye diseases (microphthalmia, chorioretinitis, cataract, nystagmus, anisocoria, optic atrophy)	51
Limb hypoplasia and other skeletal anomalies	49
IUGR	22
Muscle hypoplasia	21
Gastrointestinal abnormalities	15
Affections of internal organs	13
Developmental delay	12
Genitourinary abnormalities	12
Cardiovascular anomalies	8
Defects of other organs	7

IUGR, intrauterine growth restriction.

Prenatal Diagnosis 2012, **32**, 511–518 **Mandelbrot L**

Varicella : should prenatal diagnosis be offered ?

- Prenatal diagnosis with amniocentesis is possible with VZV PCR :
  - After maternal lesions disappear
  - Check for negative viremia
- Discuss limitations with the couple
- What does it add ?
  - Reassure if negative
  - Better ultrasound follow-up ?
  - MRI at 32 weeks
  - Neonatal follow-up
  - Potential treatment with (val)acyclovir ?

Managemant of varicella during pregnancy

- Before 21 weeks:
  - Risk of fetal varicella syndrome about 1%
  - Ultrasound follow-up
  - Discuss amniocentesis
  - Treat mother if high fever or respiratory symptoms

- After 21 (24) weeks and before term
  - No significant risk for fetus
  - Treat mother if high fever or respiratory symptoms

- Péripartum:
  - Risk of neonatal varicella (-5,+2) +++
  - Immunoglobulin + valacyclovir
  - Try to delay delivery
  - Neonatal VZIG and acyclovir

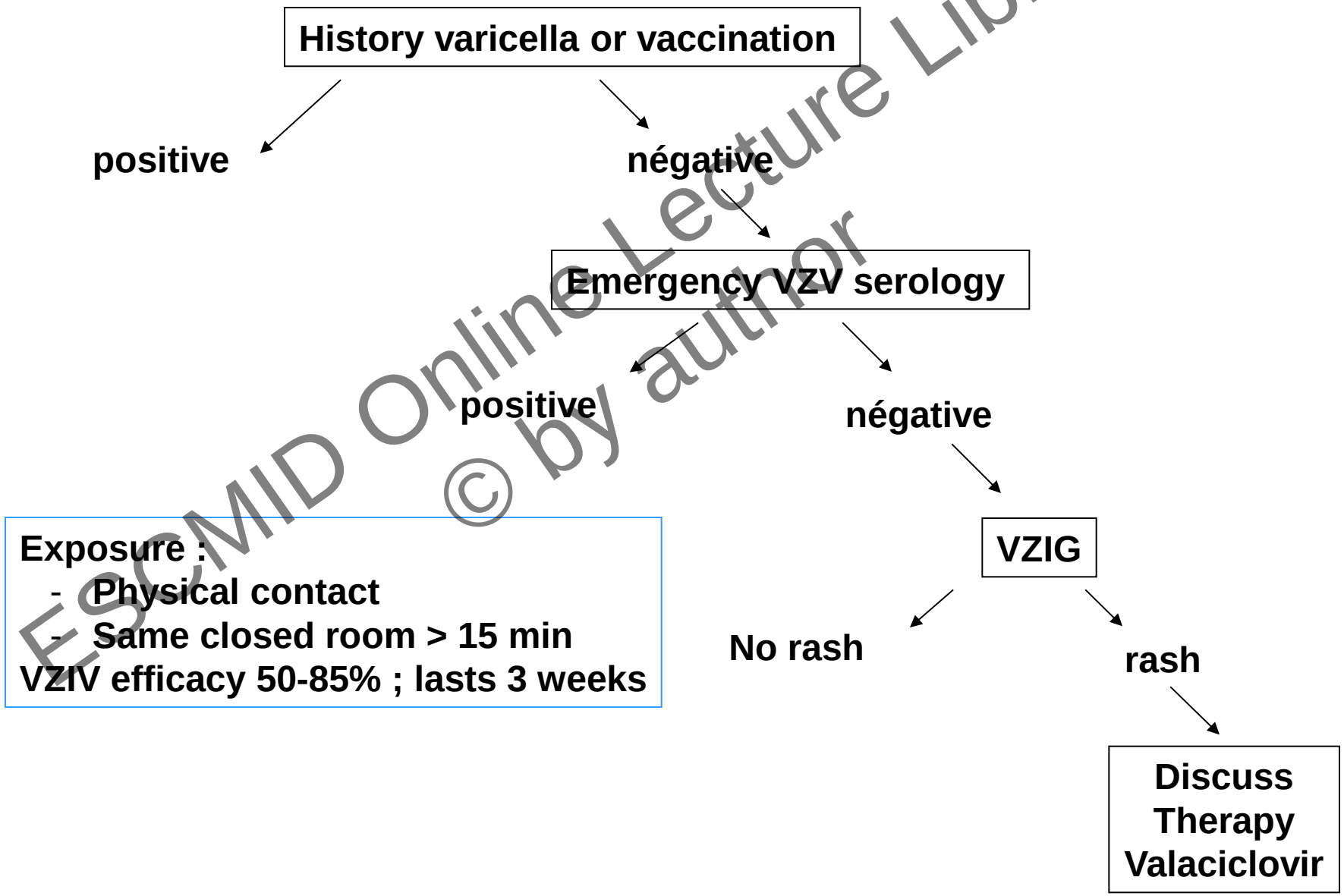
Objectives of prenatal therapy for varicella

1. Maternal health : the only proven indication
2. Treat infected fetuses in utero ?
3. Prevent mother-to-child transmission (MTCT) ?

Primary prevention of fetal and neonatal varicella

- Vaccination : various policies
  - Routine universal vaccination
  - Screen and vaccinate women of (pre)-reproductive age or preconceptionally
  - Healthcare workers who deal with pregnant women
  - Routine antenatal screening (history and selective serotesting) and postpartum vaccination of seronegative women prevents 1/2 of VZV cases (*Morgan-Capner P, Commun Dis Public Health 2002*)

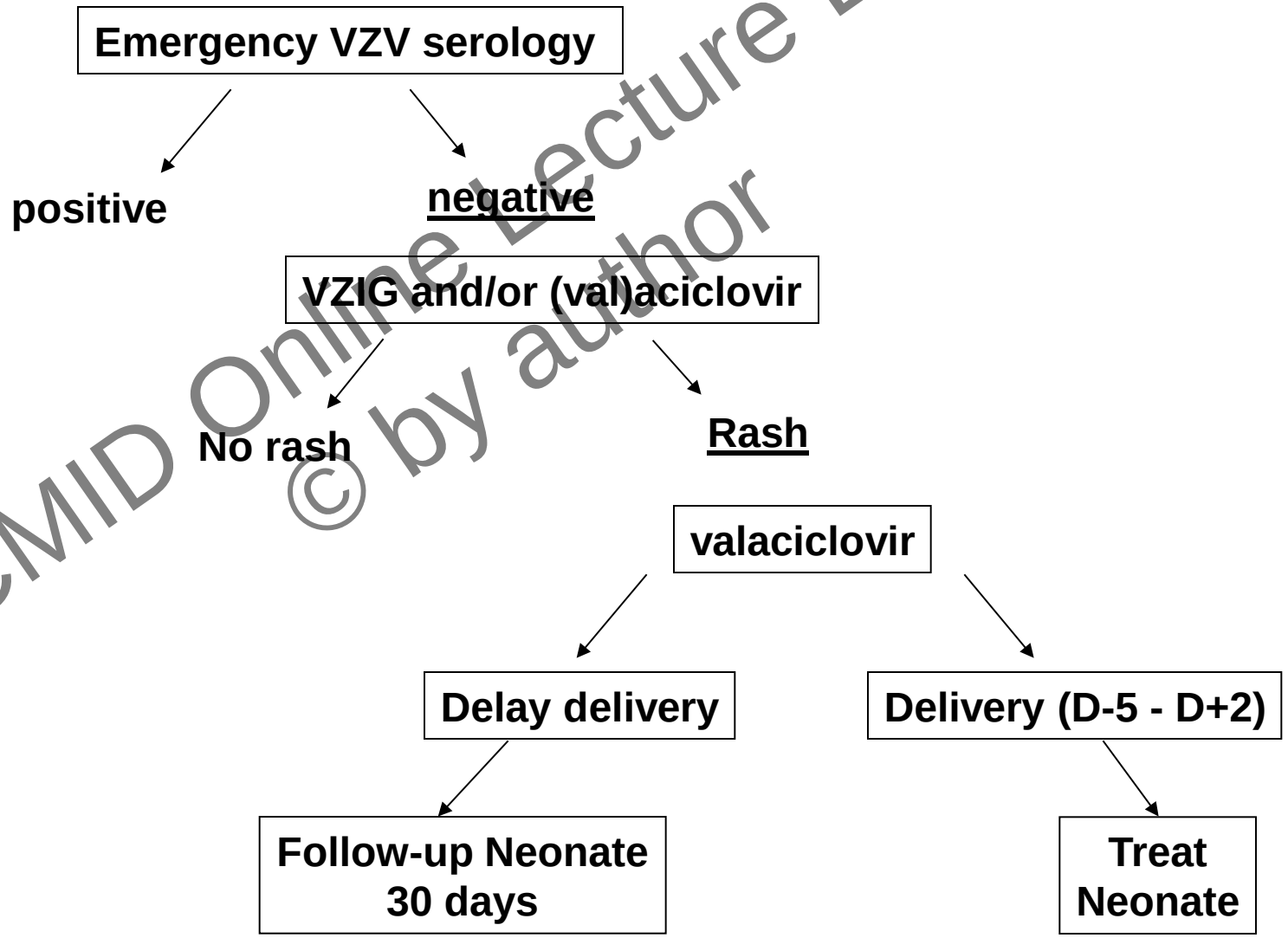
Management of exposure



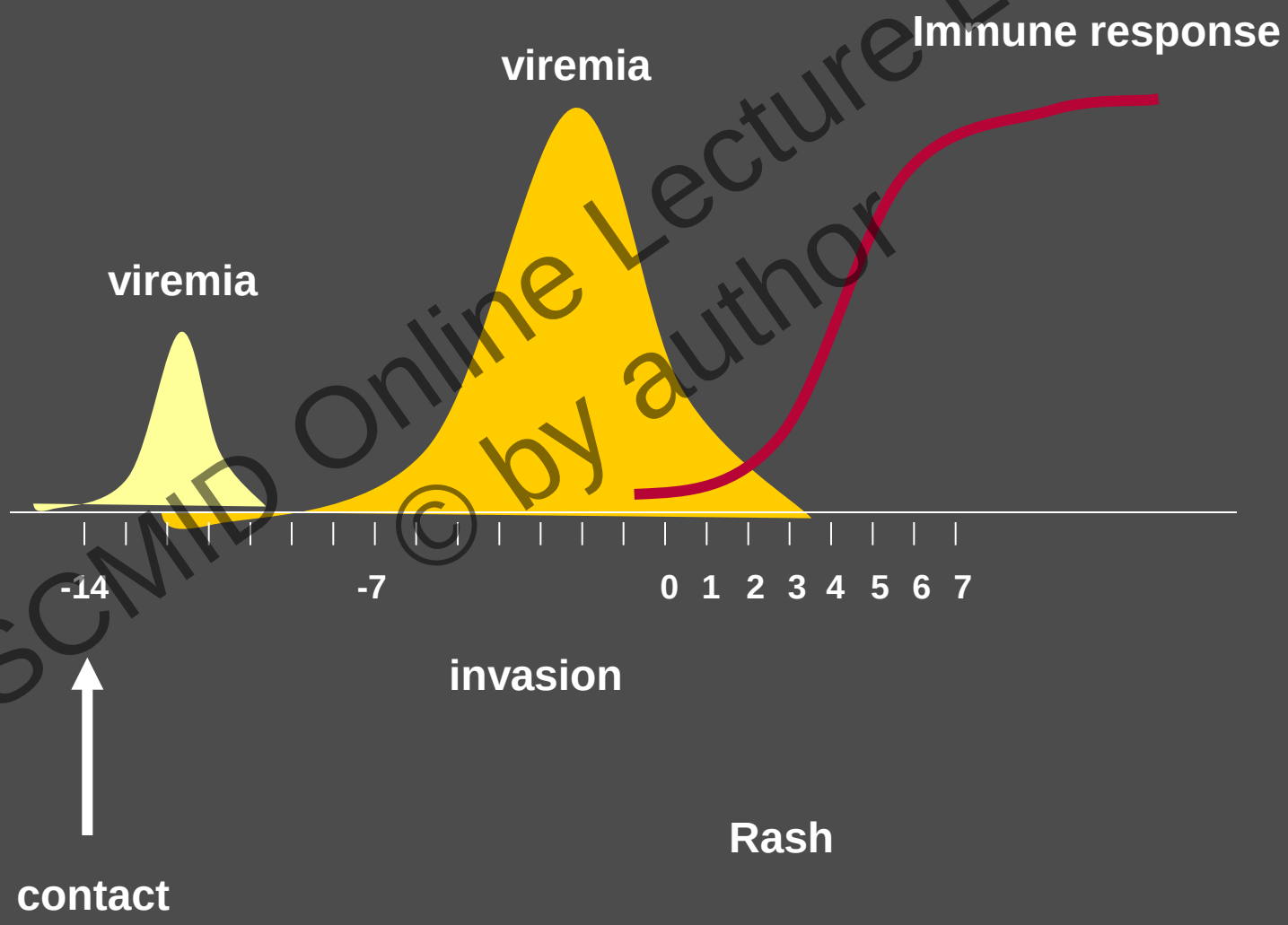
Exposure :
- **Physical contact**
- **Same closed room > 15 min**

VZIV efficacy 50-85% ; lasts 3 weeks

Exposure in late pregnancy in a mother without VZV history



Varicella in pregnancy : natural history



Conclusion

- Varicella during pregnancy carries risks for the mother and child
- Neonatal varicella is a high risk in case of matenal infection near delivery
- Fetal varicella syndrome (FVS) is a rare, but serious complication which can occur between 8 and 20 weeks gestational age
- Prenatal diagnosis of FVS can be performed with serial expert ultrasound, MRI and amniocentesis
- Antiviral therapy is justified by maternal risk in 3d trimester and neonatal risk if perinatal varicella
- Perspectives for prenatal antiviral therapy warrent further research