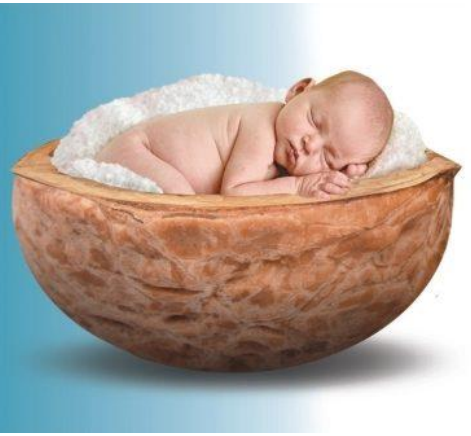
NEONATUS
2018

Międzynarodowa Konferencja
Naukowo-Szkoleniowa
27-28 września 2018
Hotel Andersia, Poznań
www.neonatus.org



X-ray vs. lung ultrasound for reliable diagnosis of neonatal respiratory failure (TTN vs. RDS)

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TTN
Transient tachypnea of the newborn

„Double Lung Point”

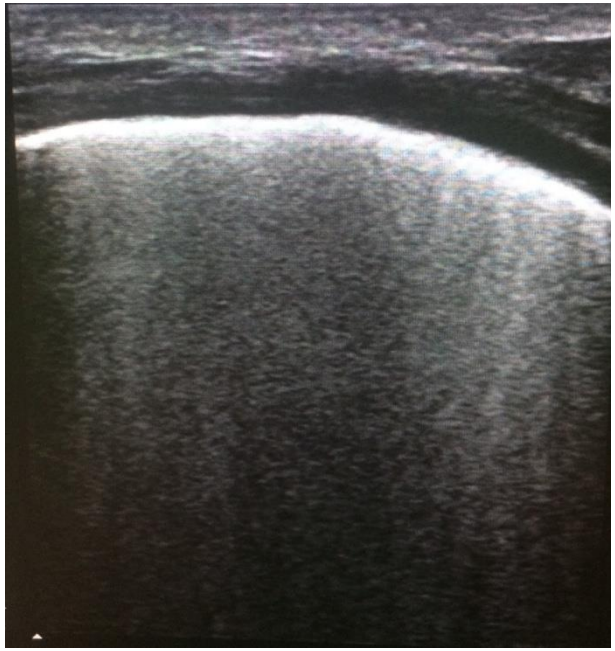
The difference in lung echogenicity between the upper and lower lung areas.

Inferior fields: multiple, compact B-lines („white lung”)
Superior fields: mostly A-lines with rare B-lines.

The ‘Double Lung Point’: An Ultrasound Sign Diagnostic of Transient Tachypnea of the Newborn
Copetti R.· Cattarossi L.

RDS Respiratory Distress Syndrome

- Alveolar- insterstitial syndrome („white lung”)
- Lack of A-lines
- Coarse, thickened pleural line
- Subpleural consolidations



RDS- Ultrasound

The sensitivity and specificity of
- **Lung consolidation,**
- **Pleural line abnormalities and**
- **Bilateral white lung**

for the diagnosis of neonatal RDS

	RDS	Control group	Total
3 signs	50 (a)	0 (b)	50 (a+b)
<3 signs	0 (c)	50 (d)	50 (c+d)
Total	50 (a+c)	50 (b+d)	100

The sensitivity and specificity of
- **Lung consolidation,**
- **Pleural line abnormalities and**
- **A-line dissapearance**

for the diagnosis of neonatal RDS

	RDS	Control group	Total
3 signs	50 (a)	0 (b)	50 (a+b)
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Total	50 (a+c)	50 (b+d)	100

„The Role of Lung Ultrasound in Diagnosis of Respiratory Distress Syndrome in Newborn Infants"
Jing Liu ; HaiYing Cao; Hua-WeiWang; XiangYong Kong

METHODS

- 40 newborns
- 1st day of life, respiratory failure
- Lung Ultrasound (LUS) performed at mean 9 (SD=6) hours of life.

Possible diagnosis:

- Transient Tachypnea of the Newborn (TTN)
- Respiratory Distress Syndrome (RDS)
- Pneumonia, pneumothorax (5 cases, excluded from the study)

- Chest X-ray (CXR) performed shortly before/after LUS
- CXR images sent to two independent radiologists

Characterictics of the group

Characteristics	Range	Mean
Gestational age (weeks)	33-41	36 (SD=2)
Birth weight (g)	1480-4390	2870 (SD=664)
APGAR score 1 min	2-10	8,2 (SD=2,1)
APGAR score 5 min	5-10	8,9 (SD=1,3)

Characteristics		No.	%
Sex	male	20	57
	female	15	43
Mode of delivery	vaginal	10	29
	cesarean	25	71

RESULTS

According to LUS:

27 cases of TTN

8 cases of RDS

	TTN	RDS
Oxygen/Bubble CPAP	23	1
NIV	4	4
Intubation (surfactant)	0	3 (2)

RESULTS

- Cohen's-Kappa coefficient indicated slight agreement between the radiologists (Kappa=0,08) as well as LUS compared to one radiologist (Kappa= 0,07);

- LUS compared to the second radiologist indicated fair agreement (Kappa=0,3)

Even 77% of the newborns with TTN are missdiagnosed with RDS

Transient tachypnea of the newborn
Greenough A. Milner AD eds. Neonatal Respiratory Disorder
2nd ed. London: CRC Press, 2003: 272-277

CONCLUSIONS

Is the CXR a „golden standard" method for differrential diagnosis between TTN and RDS?

LUS as a non-ionising method with clear features representing pathological changes seems to be a promising, reliable tool

DISCUSSION

- CXR is only a two- dimentional, static picture, whereas LUS gives the dynamic, „3D" view
- LUS allows to examine every part of the neonatal chest also after the change of the patient position/ parameters of ventilation
- Radiologist often lacks the full clinical picture of the patient, available only at the bedside

Thank you for your attention