

Advanced lung ultrasound to differentiate pneumonia and atelectasis in ICU patient

Gepubliceerd: 15-12-2020 Laatst bijgewerkt: 13-12-2022

Advanced lung ultrasound, c.q. color doppler imaging and dynamic air bronchograms can aid in differentiating pneumonia from atelectasis

Ethische beoordeling	Positief advies
Status	Werving gestopt
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON21456

Bron

NTR

Verkorte titel

ALUS

Aandoening

Pneumonia, Atelectasis

Ondersteuning

Primaire sponsor: none

Overige ondersteuning: none

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Sensitivity, Specificity, Positive/Negative Predictive Values, Positive/Negative Likelihoodratios

for pneumonia (for ultrasound parameters alone and within a clinical prediction score/decision tree) assessed by lung ultrasound (flow measured by color doppler imaging and the dynamic air bronchogram). Pneumonia will be defined as the clinical diagnosis established by the treating physician when all clinical data necessary to establish a diagnosis are available (cq. CRP, leukocytes, Temperature, physical examination, Imaging summary (CXR or CT) and gram stain information). The timepoint for this diagnosis will be set at within 24 hours after the gramstain is available. The ultrasound will be performed within 24 hours of chest X-ray and the ultrasound diagnosis will be made directly at the bedside after completion of the ultrasound exam without delay.

Toelichting onderzoek

Achtergrond van het onderzoek

The study will be a prospective, observational cohort study, conducted on the ICU of the Amsterdam UMC, Vrije Universiteit Amsterdam, a tertiary academic hospital in Amsterdam, the Netherlands. Patients will followed-up until discharge. The protocol was approved by the local ethics board as part of other ongoing studies and informed consent will be obtained by patients or their next of kin. STROBE-Guidelines (STrengthening the Reporting of OBservational studies in Epidemiology) will be followed.

Study population

The study population will consist of adult (>18 years) patients, admitted to the ICU, with any type of consolidation seen on chest X-ray (CXR). Patient with ARDS, trauma with pulmonary contusion and in contact isolation will be excluded. Sex, age, reason for ICU admission, SOFA score (Sequential Organ Failure Assessment) on the day of measurement, use of mechanical ventilation and inflammatory markers will be recorded on the same day of ultrasound assessment. Gram stain colouring and bacterial culture results will be recorded when made available in the electronic patient dossier.

Ultrasound Measurements:

All images will be made by an independent researcher, with a Philips CX50 ultrasound. All measurements will be performed following the BLUE-protocol, with additional measurements in the PLAPS point (see below). Image acquisition will take place directly after performance of the CXR, with a maximum duration of 24 hours between CXR and ultrasonographic examination. Evaluation of the images will take place directly after acquisition. Researchers making the images and measurements will be blinded to the clinical status of the patient, and will only be allowed to view the chest X-ray.

Flow:

Pulmonary vascular flow will be assessed with color doppler. In order to maximize the sensitivity for low-velocity flow, the velocity scale will be set to 0.25m/sec. To avoid interference with adjacent structures, the window of assessment will be minimalized. Flow will be deemed present if homogeneously distributed tree-like, tortuous or fragmented

vascular structures with blood flow in the lumen is seen through several respiratory cycles. In the case that flow is only seen in one part of the consolidation or only on one of the two PLAPS points, it is still denoted as being present.

Bronchogram:

Bronchograms will be assessed in B-mode with ultrasound settings to the preference of the researcher. They are defined as small punctiform or linear hyperechoic artefacts within the consolidated tissue. In case motion is visible in concordance with the patient's respiratory cycle it will be deemed dynamic.

Doel van het onderzoek

Advanced lung ultrasound, c.q. color doppler imaging and dynamic air bronchograms can aid in differentiating pneumonia from atelectasis

Onderzoeksopzet

n.a.

Contactpersonen

Publiek

Amsterdam UMC
Mark Haaksma

0648072416

Wetenschappelijk

Amsterdam UMC
Mark Haaksma

0648072416

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

Adult (18 years) patients admitted to the ICU with consolidation on chest X-ray

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

ARDS, pulmonary contusion, contact isolation, COVID-19

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Anders
Toewijzing:	N.v.t. / één studie arm
Blinding:	Enkelblind
Controle:	N.v.t. / onbekend

Deelname

Nederland	
Status:	Werving gestopt
(Verwachte) startdatum:	08-10-2018
Aantal proefpersonen:	118
Type:	Werkelijke startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Ja

Toelichting

Upon reasonable request by other researchers for research purposes only

Ethische beoordeling

Positief advies	
Datum:	15-12-2020
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL9186
Ander register	METC VUmc : 2016.456

Resultaten