

Sepsis progression to multiple organ dysfunction in carotid chemo/baro-denervated rats treated with lipopolysaccharide

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Sepsis progresses to multiple organ dysfunction (MOD) due to the uncontrolled release of inflammatory mediators. Carotid chemo/baro-receptors could play a protective role during sepsis. In anesthetized male rats, we measured cardiorespiratory variables and plasma TNF- α , glucocorticoids, epinephrine, and MOD marker levels 90. min after lipopolysaccharide (LPS) administration in control (SHAM surgery) and bilateral carotid chemo/baro-denervated (BCN) rats. BCN prior to LPS blunted the tachypneic response and enhanced tachycardia and hypotension. BCN-LPS rats also showed blunted plasma glucocorticoid responses, boosted epinephrine and TNF- α responses, and earlier MOD onset with a lower survival time compared with SHAM-LPS rats. Consequently, the complete absence of carotid chemo/baro-sensory function modified the neural, endocrine and inflammatory responses to sepsis. Thus, carotid chemo/baro-receptors play a protective role in sepsis. © 2014 Elsevier B.V.

Bilateral carotid/sinus neurotomy

Carotid body

Epinephrine

Glucocorticoids

Multiple organ dysfunction

Sepsis

Tissue damage

TNF-?

adrenalin

cortisone

glucocorticoid

hydrocortisone

lipopolysaccharide

tumor necrosis factor alpha

adrenalin

glucocorticoid

lipopolysaccharide

tumor necrosis factor alpha

animal cell

animal experiment

animal model

Article

bilateral carotid sinus neurotomy

breathing rate

cardiovascular response

corticosterone blood level

death

disease severity

heart rate

hypotension

male

multiple organ failure

nonhuman

protein blood level

rat

risk factor

sepsis

surgical technique

survival time

systolic blood pressure

tachycardia

tachypnea

tidal volume

tissue injury

treatment response

animal

blood

breathing

carotid body

chemically induced

complication

denervation

drug effects

metabolism

multiple organ failure

nonparametric test

physiology

pressoreceptor

procedures

sepsis

Sprague Dawley rat

survival

toxicity

Animals

Carotid Body

Denervation

Epinephrine

Glucocorticoids

Heart Rate

Lipopolysaccharides

Male

Multiple Organ Failure

Pressoreceptors

Rats

Rats, Sprague-Dawley

Respiration

Sepsis

Statistics, Nonparametric

Survival Analysis

Tidal Volume

Tumor Necrosis Factor-alpha