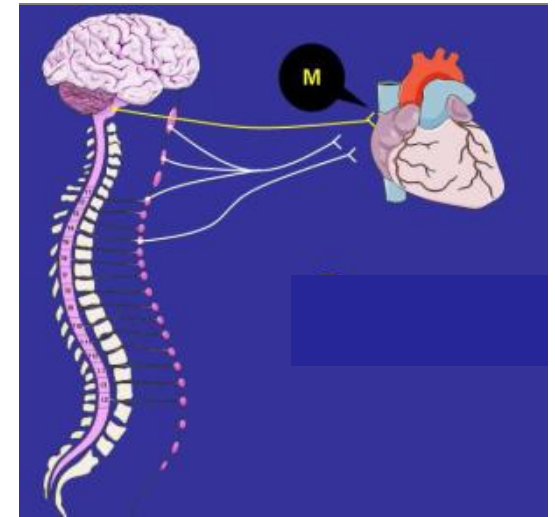


CLINICAL APPLICATION OF A VAGAL HYPERREACTIVE ANIMAL MODEL

**A.Livolsi, N.Niederhoffer, A.N.Dali Youssef, C.Olexa,
W.Mokni, P.Helms, G. Roul, P.Bousquet**

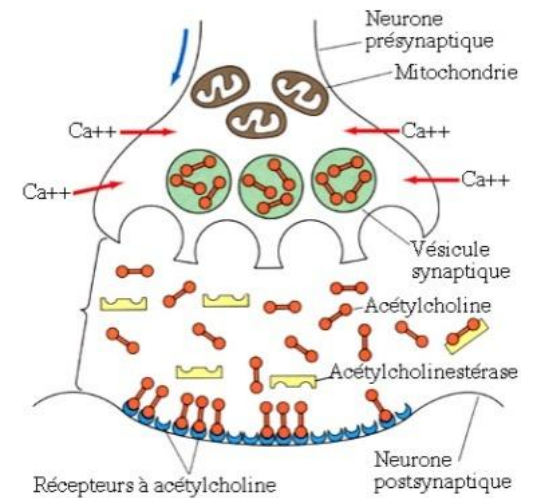
Laboratory of Neurobiology and Cardiovascular Pharmacology
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ANIMAL MODEL and BIOLOGICAL SUBSTRATE

Livolsi and Coll, Circulation 2002

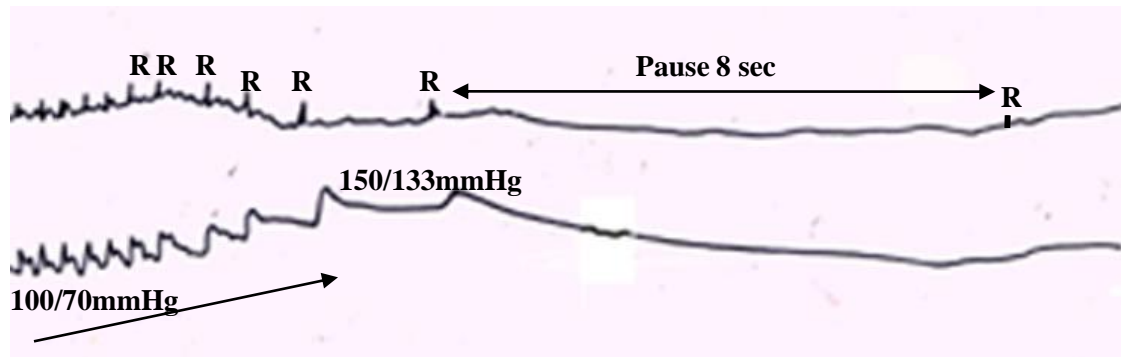
Livolsi and Coll, PLoS ONE 2010



VAGAL HYPERREACTIVE (H) RABBIT



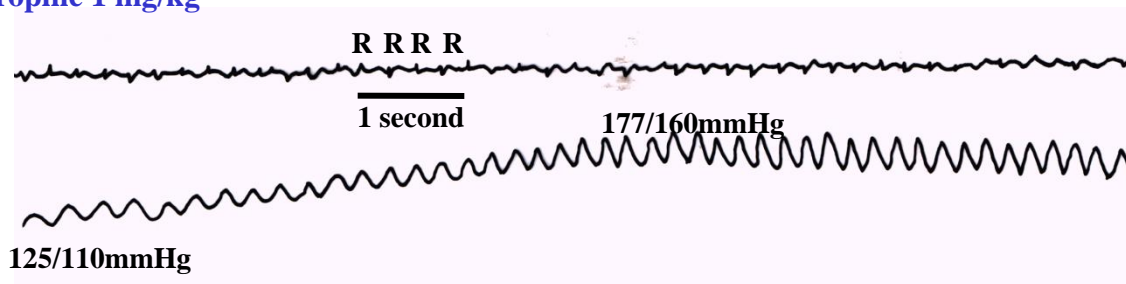
PNE 100 μ g/kg iv



ECG

AP (mmHg)

PNE 100 μ g/kg iv + atropine 1 mg/kg

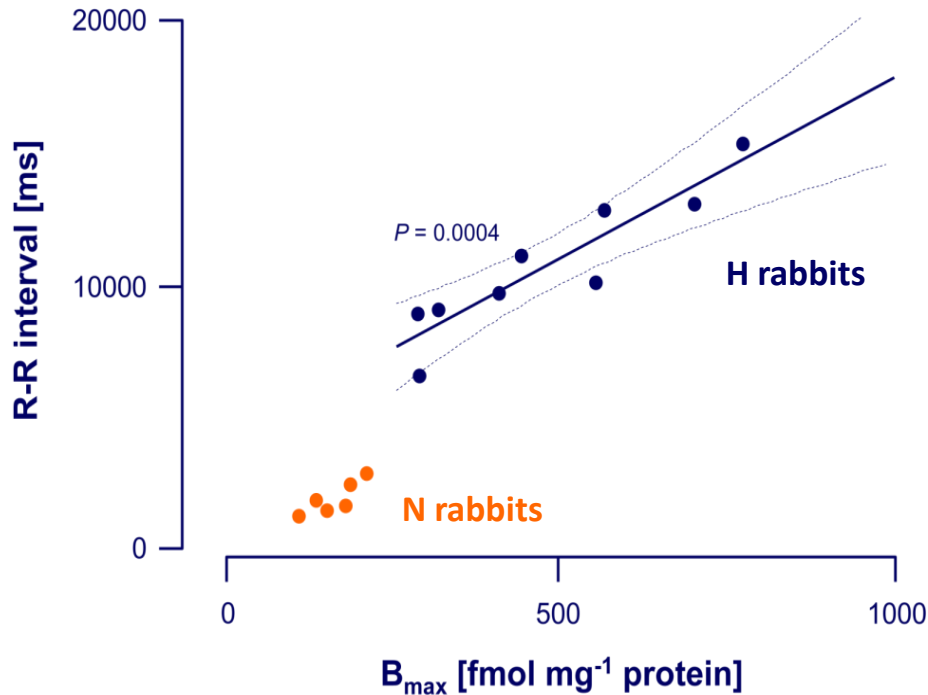


ECG

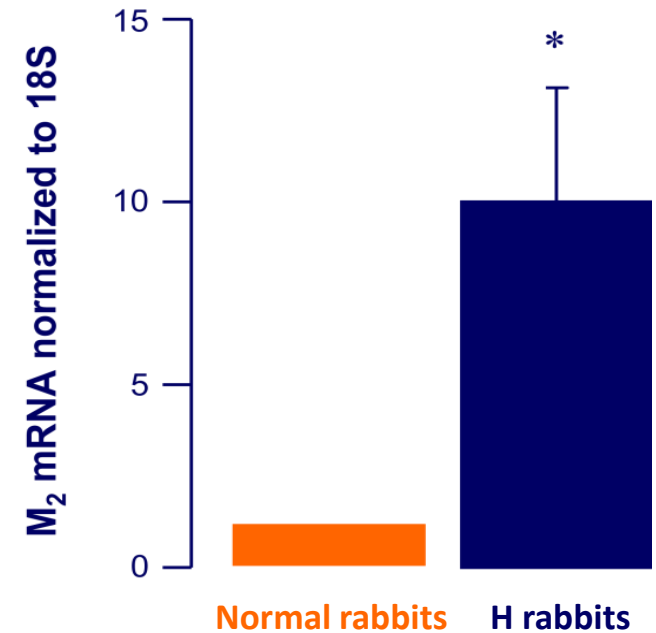
AP (mmHg)

OVEREXPRESSION OF MUSCARINIC RECEPTORS

HEART

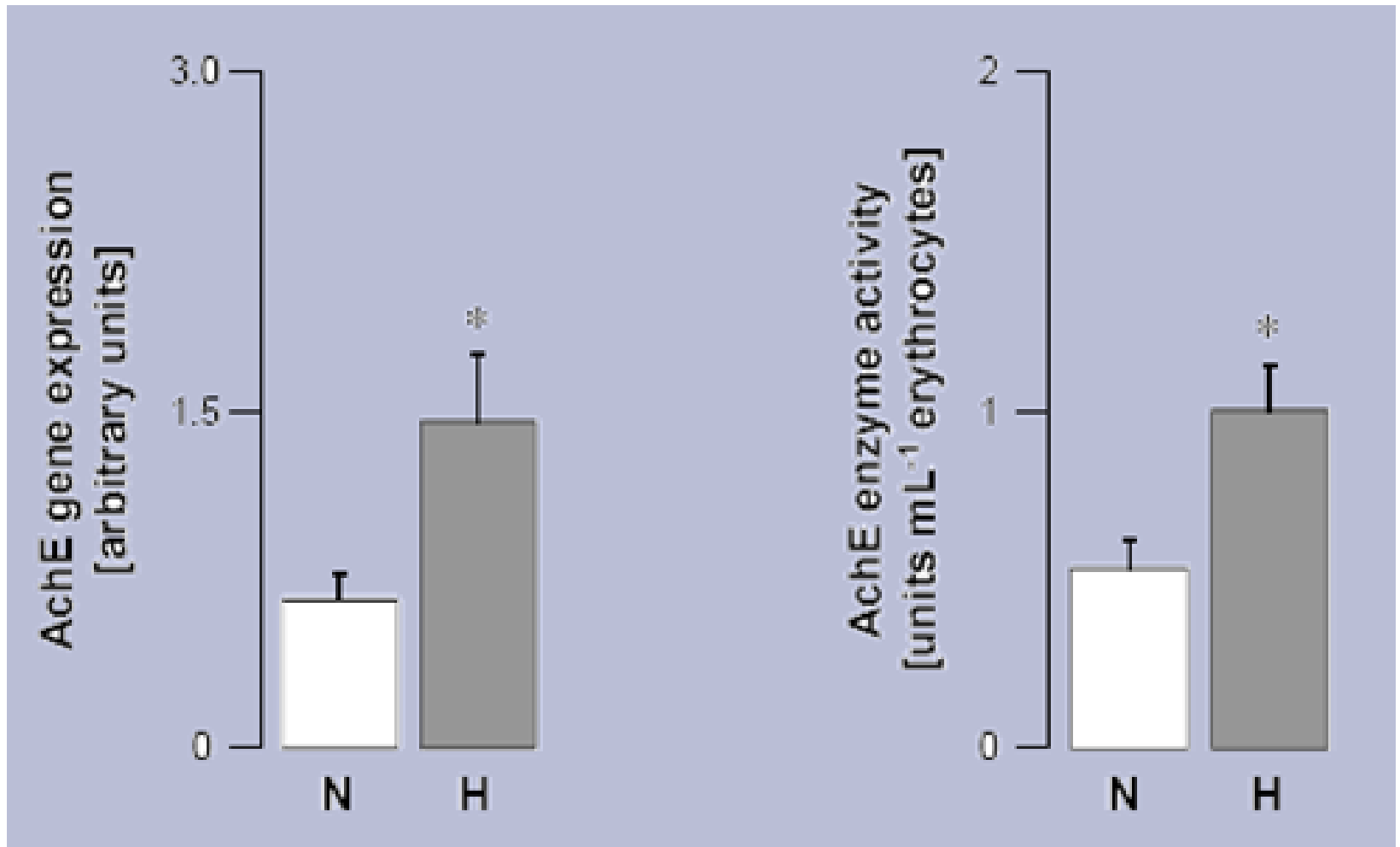


LYMPHOCYTES



M receptor overexpression in lymphocytes is the mirror of heart's overexpression

Overexpression of AchE in heart and lymphocytes



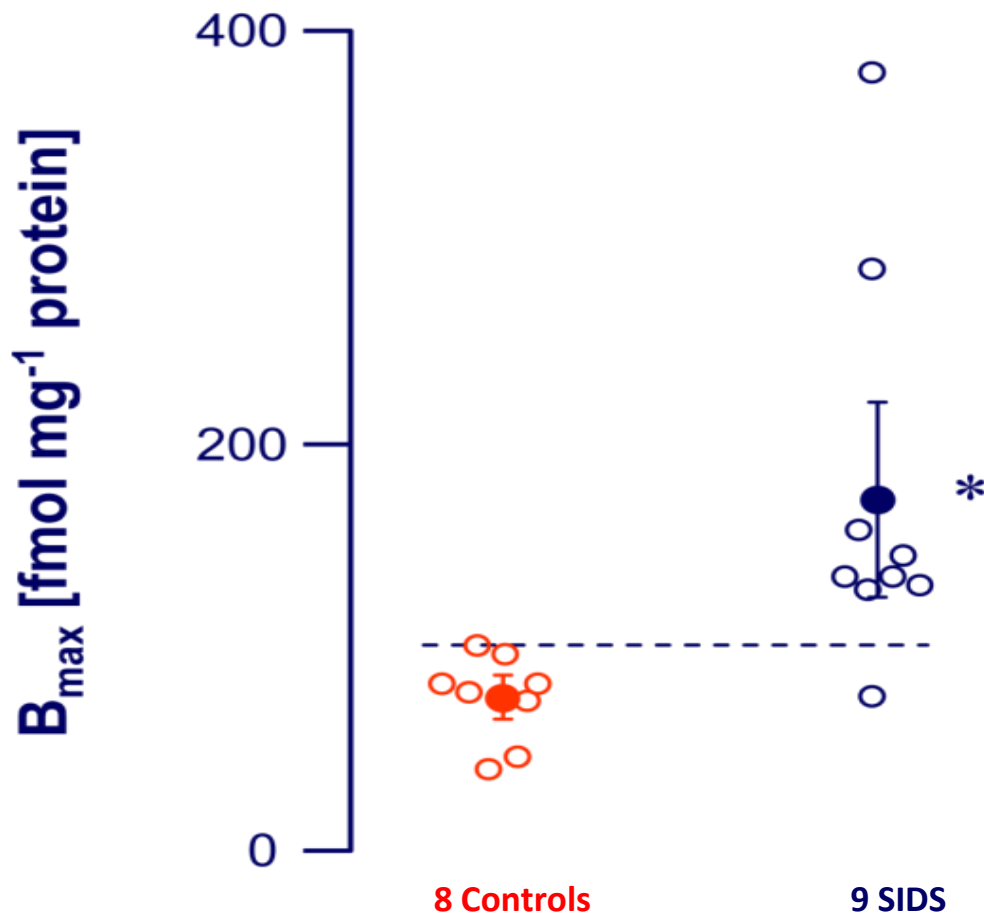
CLINICAL APPLICATIONS :

VAGAL SYNCOPE, SIDS

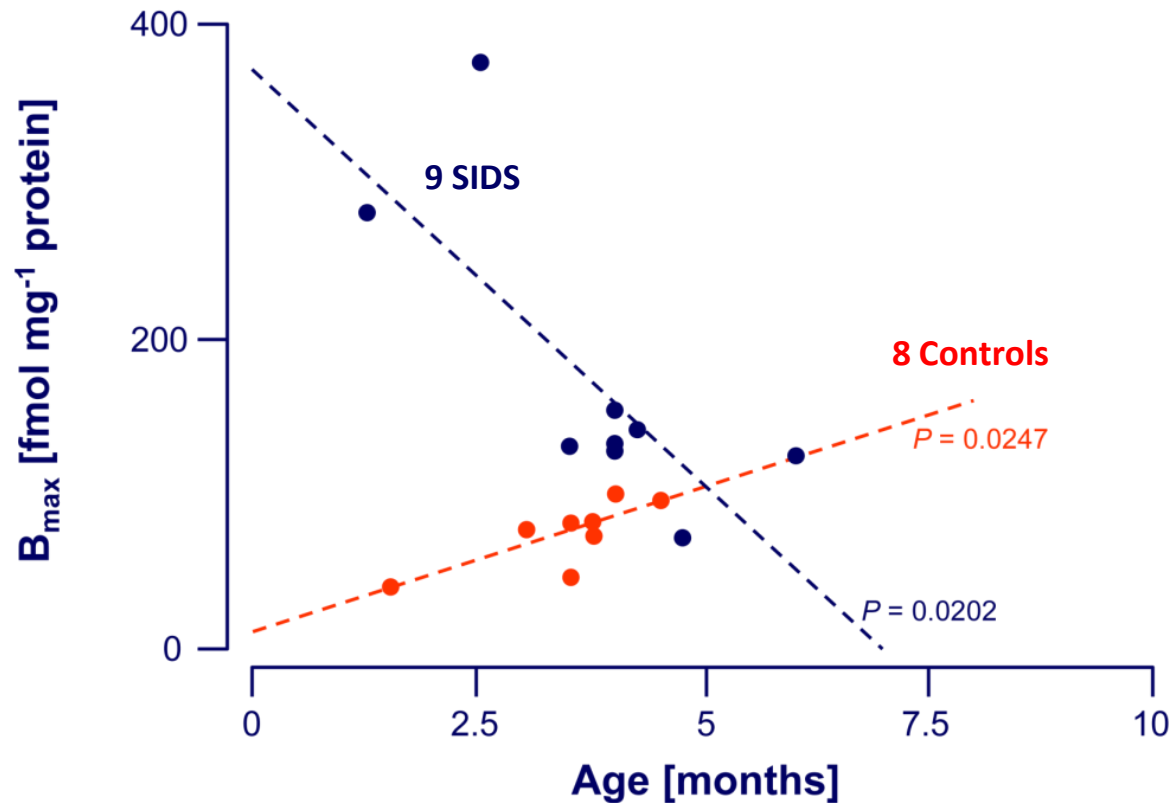
(Livolsi and Coll, PLoS ONE 2010)



OVEREXPRESSION OF HEART MUSCARINIC RECEPTORS in SIDS victims

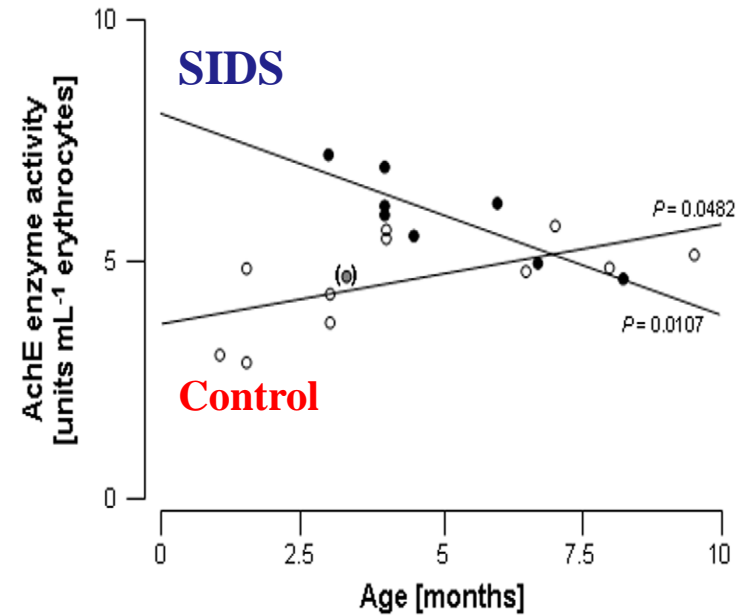
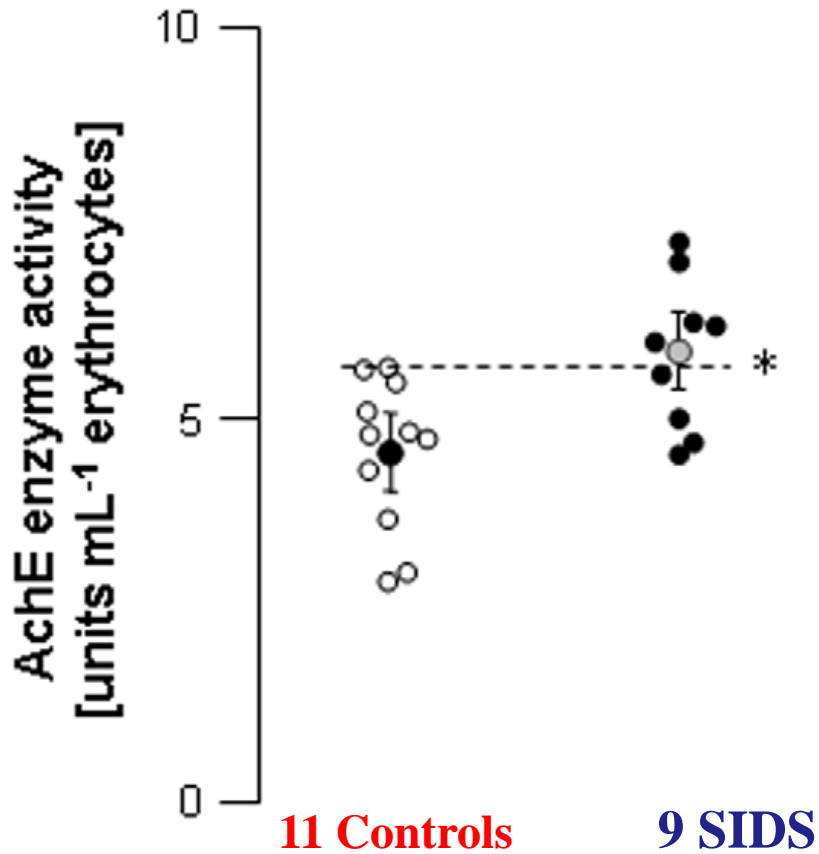


OVEREXPRESSION of HEART MUSCARINIC receptors in SIDS victims



The higher the muscarinic receptors, the earlier the death of SIDS victims

OVEREXPRESSION of AchE in BLOOD of SIDS victims



Increase of AchE enzyme activity in SIDS : a failing compensatory mechanism ?

CONCLUSION



- ✓ The overexpression of **cardiac muscarinic receptors** seems to play a critical role in the development of vagal hyperreactivity in this living **animal model** and in **SIDS victims**.
- ✓ It may account for the **biological vulnerability to SIDS**. The larger the alterations in vagal regulation, the earlier the age of death in SIDS victims.
- ✓ **In blood**, muscarinic receptor expression level appears as a **reliable and easily measurable marker of baroreflex dysfunction in animal**. It has to be proved in human.
- ✓ Thus, further studies are going to seek whether muscarinic receptors expression level in blood could be:
 - a screening test for sudden death in neonates ?
 - a reliable biological diagnosis of vagal syncopes ?

