

Secretoneurin plasma levels are decreased after catheter ablation for atrial fibrillation, patients with AF produce lower SN levels than healthy individuals

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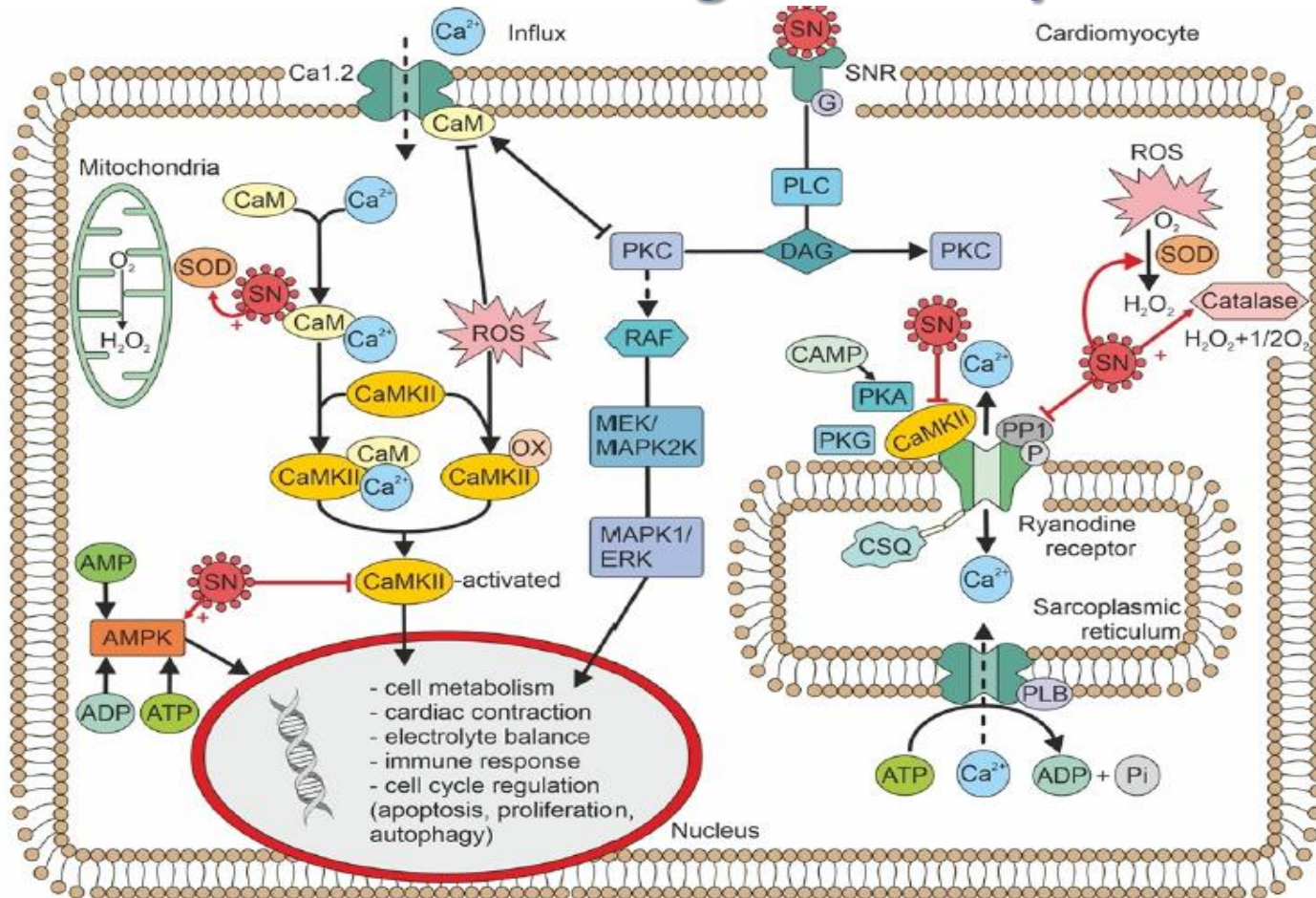
Agenda

- Úvod do problematiky SN
- Metody
- Výsledky
- Diskuze
- Závěr

Biologické efekty secretoneurinu

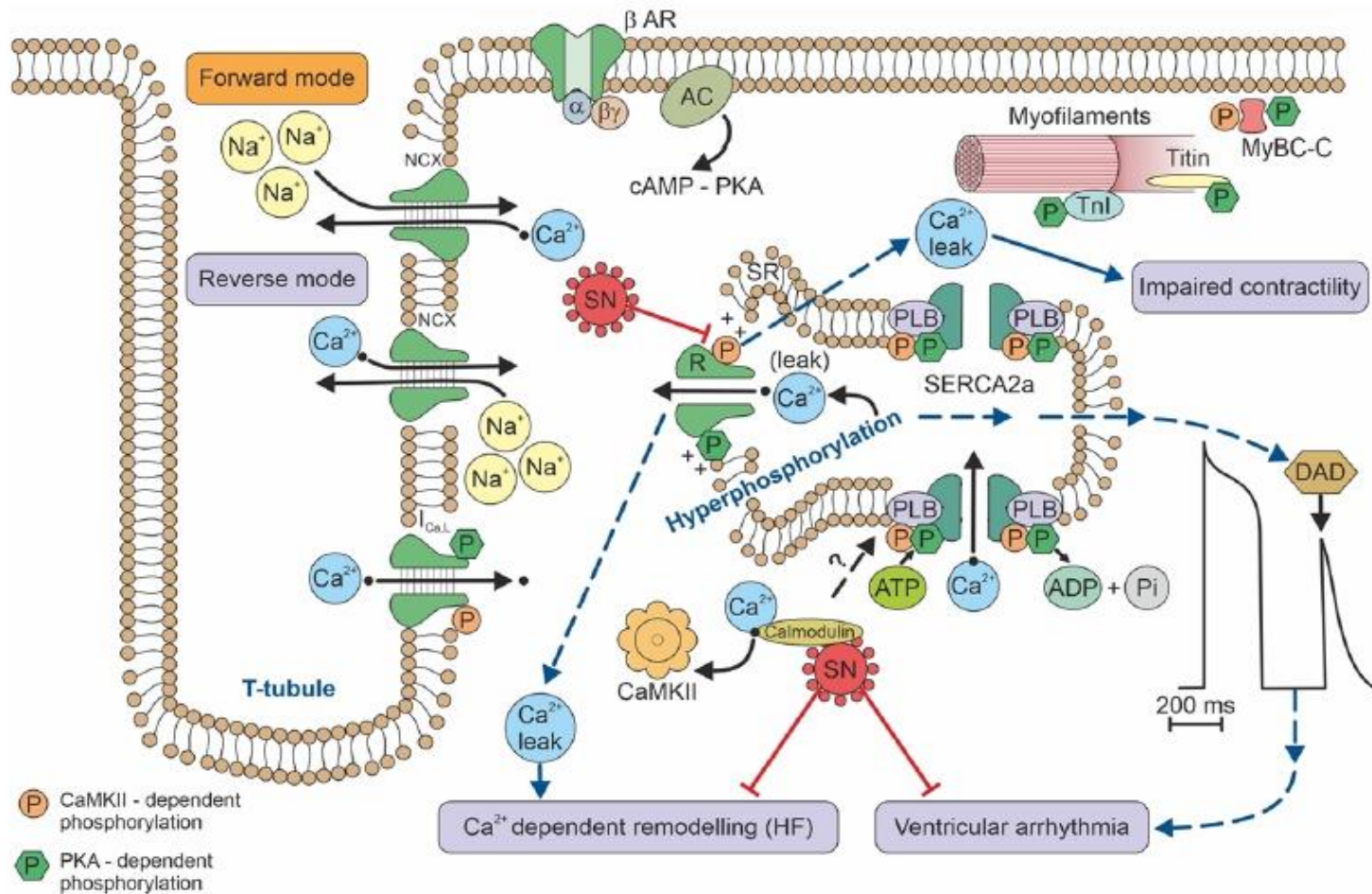
- Do buňky se dostane přes vlastní receptor spřažený s G proteinem
- Známé efekty přes vazbu na calmodulin
- Snižuje RyR-mediovaný únik Ca^{2+}
- Může nepřímo ovlivnit i CaMKII
- Má zřejmě anti-apoptotický, proliferační efekt+ stimuluje EGFR (angiogeneze)

Biologické efekty SN



Plášek J et al. Secretoneurin as a Novel Biomarker of Cardiovascular Episodes: Are We There Yet? A Narrative Review. *J Clin Med* 2022;11(23):7191

Potenciální mechanismy arytmogeneze



Cíl + metody

- Asociace hladin SN před a po katetrizační ablaci pro FS s klinickými/para-klinickými ukazateli
- Srovnání hladin SN se zdravými jedinci
- Srovnání levo-síňové hladiny SN a hladiny v CS
- Prospektivní náběr pacientů indikovaných ke katetrizační ablaci pro FS (RFA/PFA), u PFA markery hemolýzy
- Registrace: NCT05794464
- R studio posit cloud version 4.3.2 (Posit software, PBC, Boston, USA).

Základní charakteristika souboru

ACEi (%)	34.6
Betablockers (%)	82.7
AT1 blockers (%)	26.3
Propafenon (%)	36.8
Amiodaron (%)	30.8
Sotalol (%)	6.8
Diuretics (%)	6.3
DOACs (%)	94.2
Warfarin (%)	3.8
Reduced DOACs dose (%)	4
Statin (%)	56.8

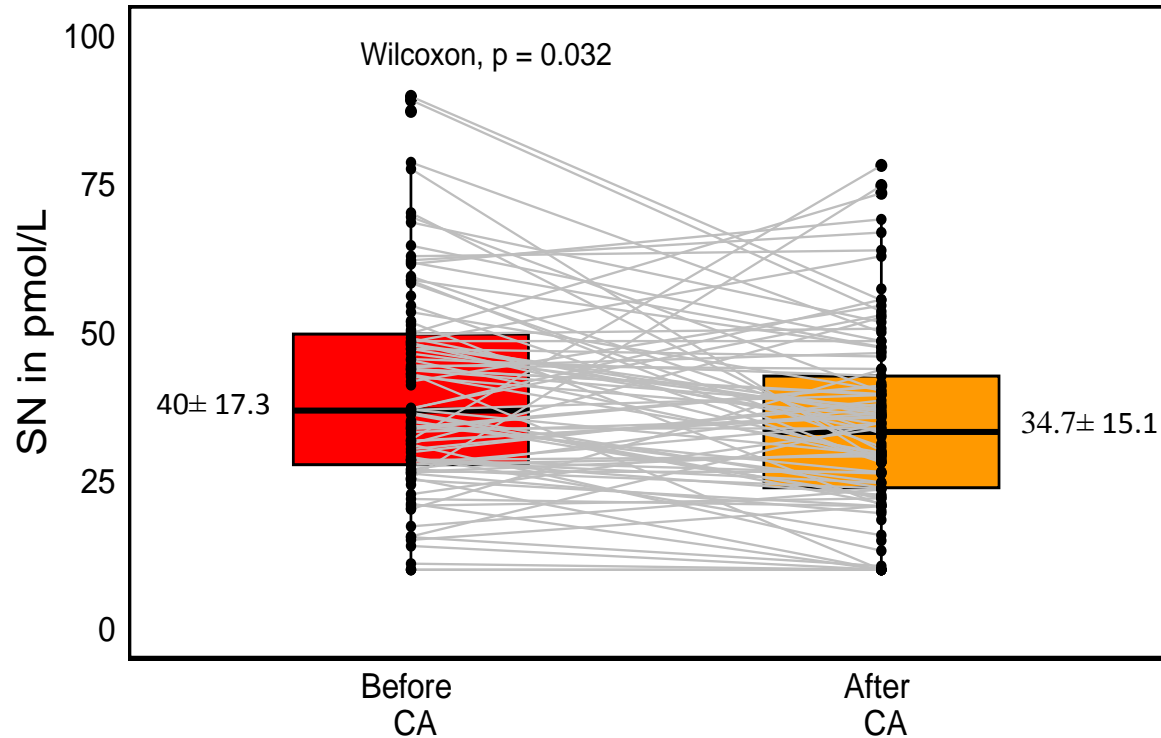
	Total population	Males	Females	P value
	N = 137	N = 88	N = 49	
Age (years)	63±11	61.2 ± 11.2	66.1 ± 10	P=0.01
Males (%)	64	-	-	
Body weight (kg)	79.6±37.5	88.1 ± 38	64.7 ± 32.1	P<0.001
Body height (cm)	174.4 ± 10.6	180.4 ± 7.5	164 ± 6.3	P<0.001
Body mass index (kg/m ²)	30 ± 5.1	30.2± 5.2	30 ± 5.1	P=0.94
LV ejection fraction (%)	56.6 ± 9.2	55.6 ± 9.6	58.5 ± 8.3	P=0.1
LA volume index (ml/m ²)	36.8 ± 19	36.7 ± 16	37 ± 24	P=0.94
Left atrial diameter (mm)	43.8 ± 6	44.8 ± 5.3	42 ± 6.7	P=0.02
Hypertension (%)	79.7	81	77.6	P=0.92
Parox. Atrial fibrillation (%)	69.6	67.4	73.5	P=0.47
Persist.Atrial fibrillation (%)	30.4	32.6	26.5	P=0.46
Dyslipidemia (%)	67.7	72.6	59.2	P=0.11
Diabetes mellitus (%)	13	17	26.5	P=0.07
Previous stroke/TIA (%)	12	13.1	10.2	P=0.62
Coronary artery disease (%)	22.6	23.3	20.4	P=0.65

Procedurální data+rekurence

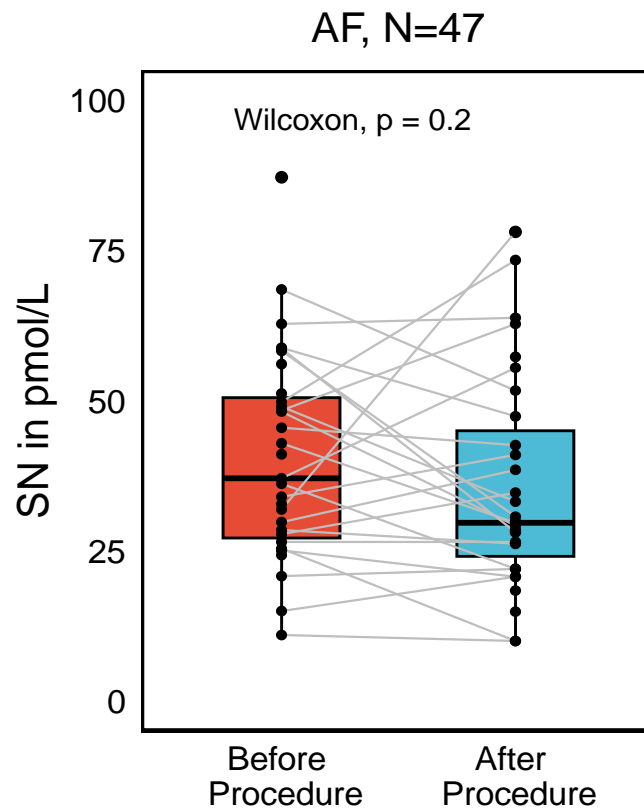
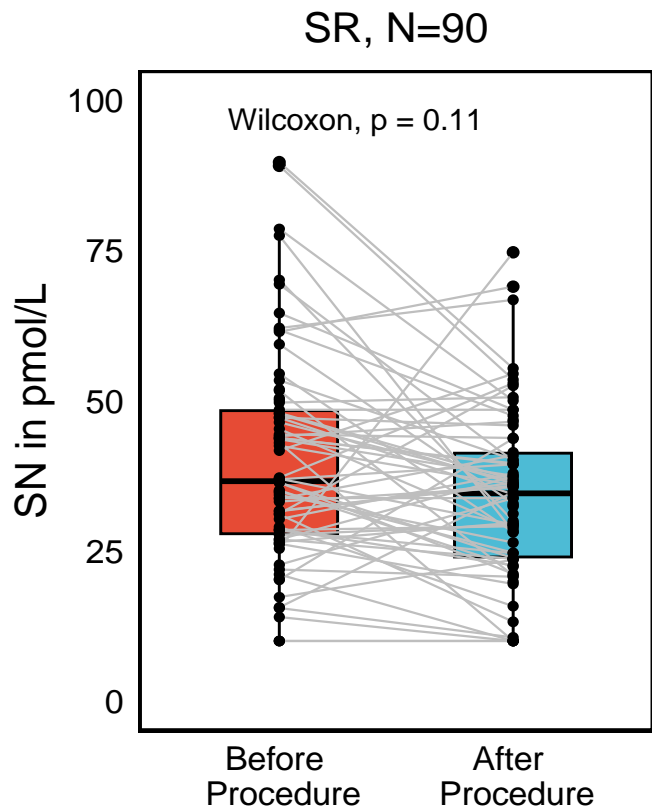
	Total population	RFA	PFA	P value
	N = 137	N = 98	N = 39	
AF recurrency (%)	18.2	24.5	2.5	P<0.0001
Time to AF recurrency (days)	87.8±79.9	87.4± 80	11	P<0.0001
CHA ₂ DS ₂ Vasc score	2.5±1.3	2.6 ± 1.4	2.2±1.3	P= 0.077
AF duration (months)	29.5±40.6	31.6±45.1	24.5±27	P= 0.37
General anesthesia (%)	62	10.2	92.3	P<0.0001
Navigation system * (%)	72.3	100	2.5	P<0.0001
Total procedure time (min)	134.8 ± 48.5	152.9±36.2	84.8 ± 43.2.	P<0.0001
Total ablation time (min)	32.3 ± 32.6	43.7 ± 31.1	4.7 ± 14.6	P<0.0001
Fluoroscopic time (min)	8.6 ± 5.9	8.4 ± 5.8	9.3 ± 6.2	P= 0.42
Fluoroscopic dose (μGy/m2)	2699.8 ± 3120.9	2779.4 ± 3528	2491.2 ± 1652.2	P= 0.63
Ablation application	83 ± 44.3	92.3 ± 42.7	59.3 ± 39.5	P<0.0001

Secretoneurin před a po ablaci

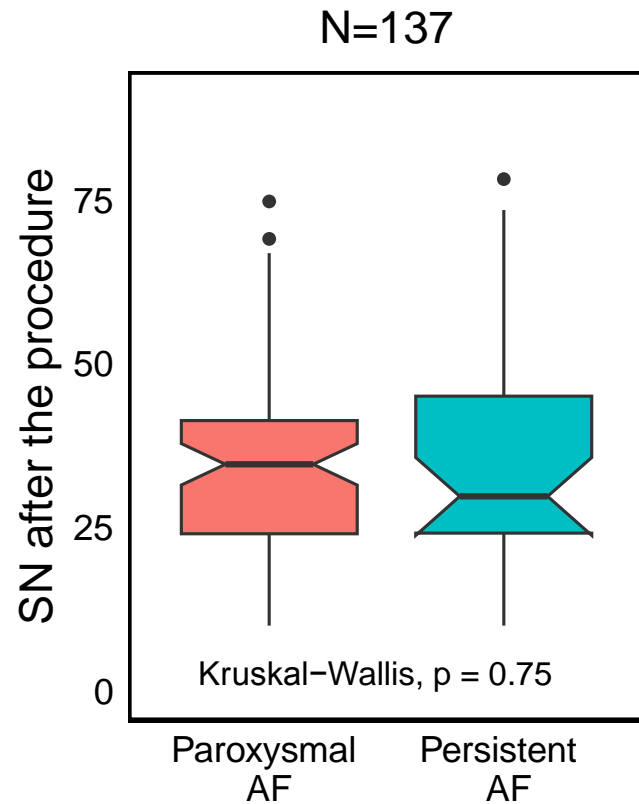
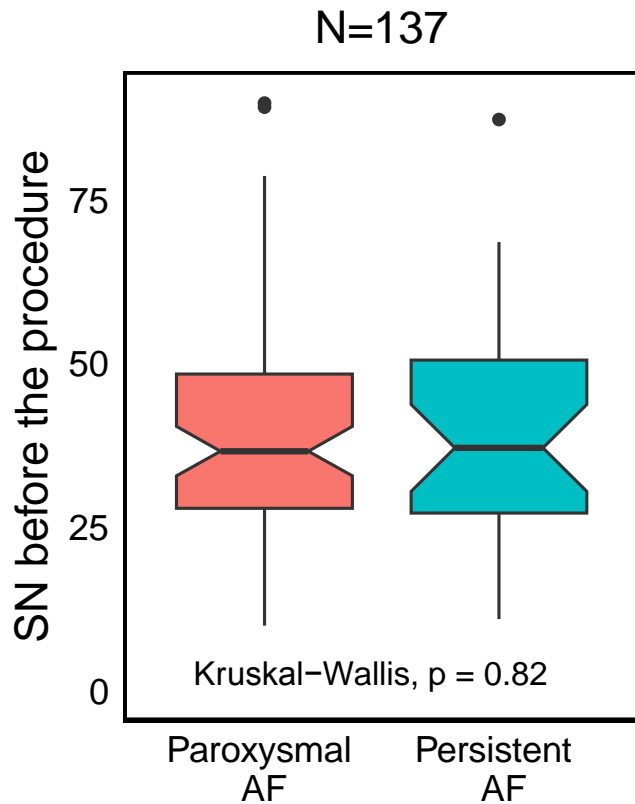
SN before/after, N=137



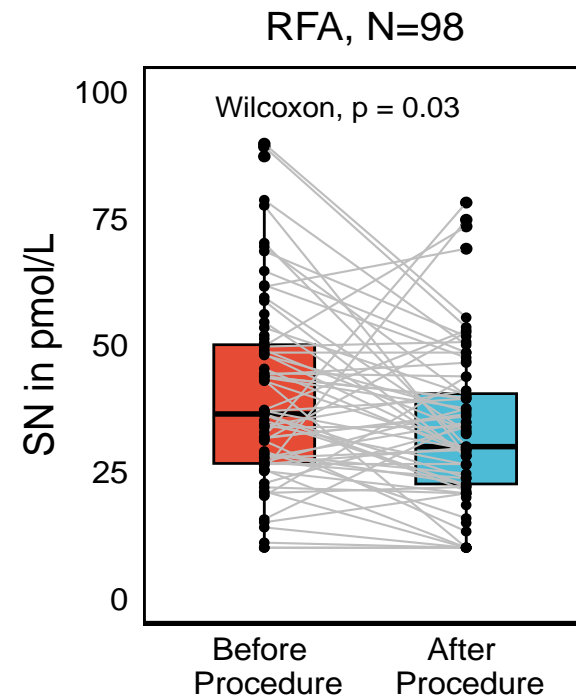
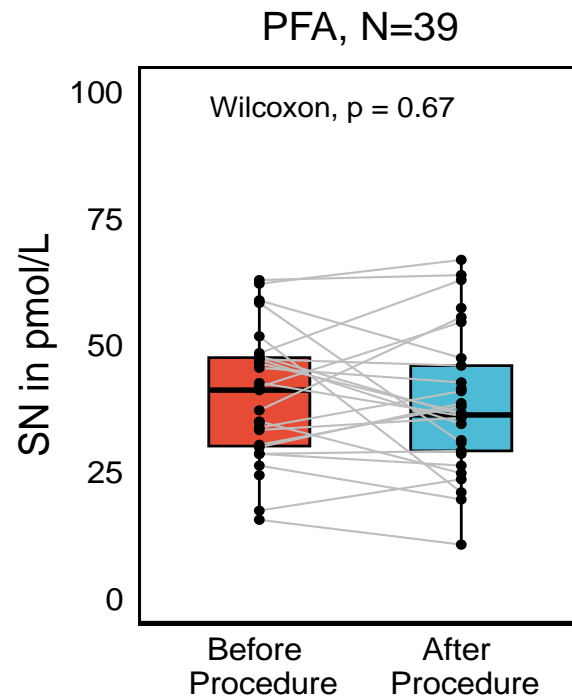
SN před a po výkonu



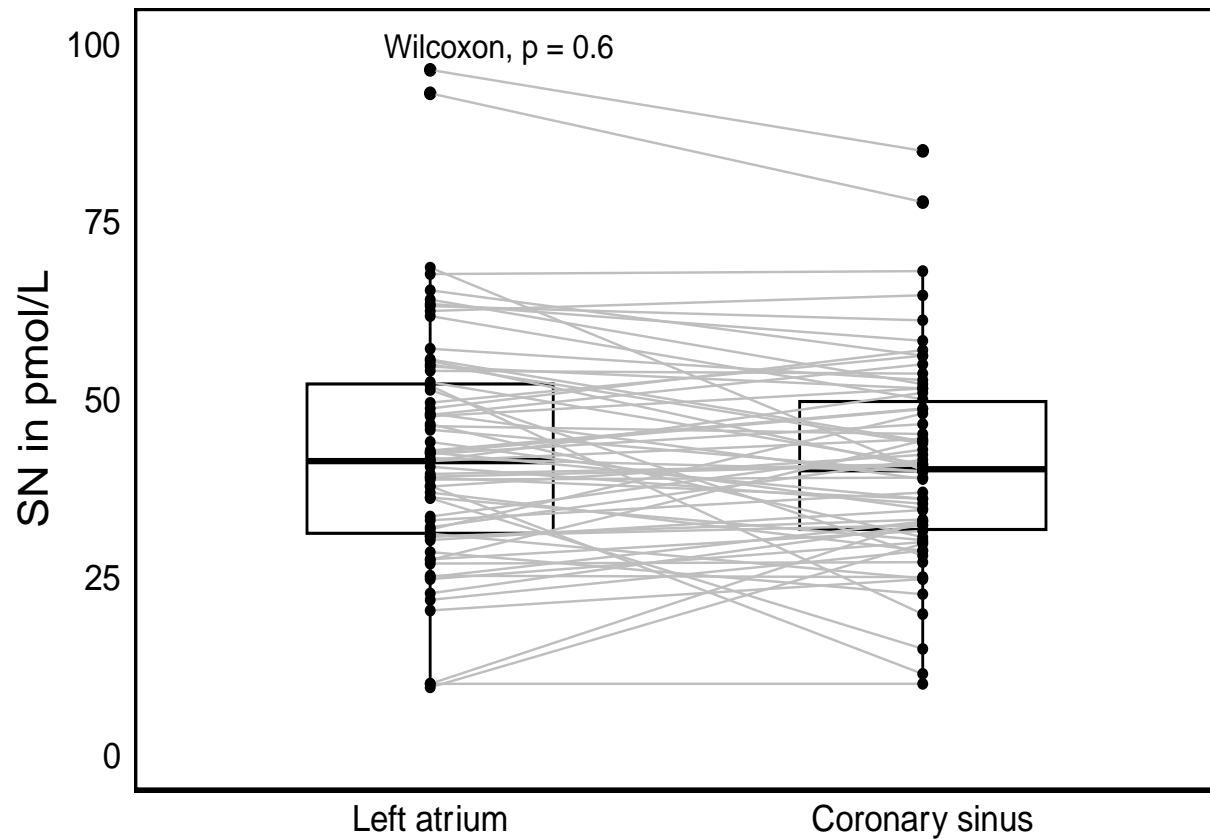
Secretoneurin
před/po
podskupiny



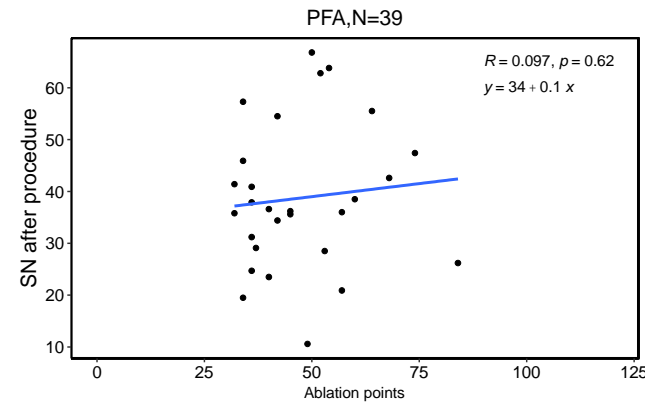
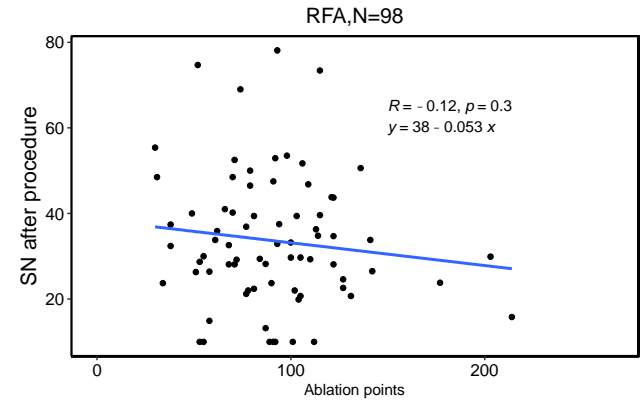
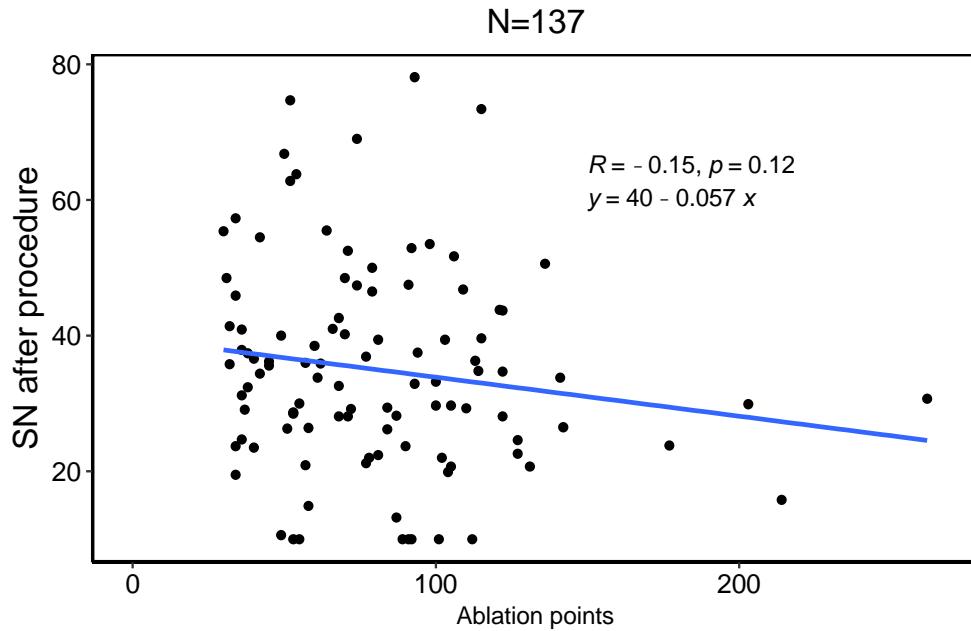
SN v kontextu PFA/RFA



SN z levé
síně vs.
koronární
sinus

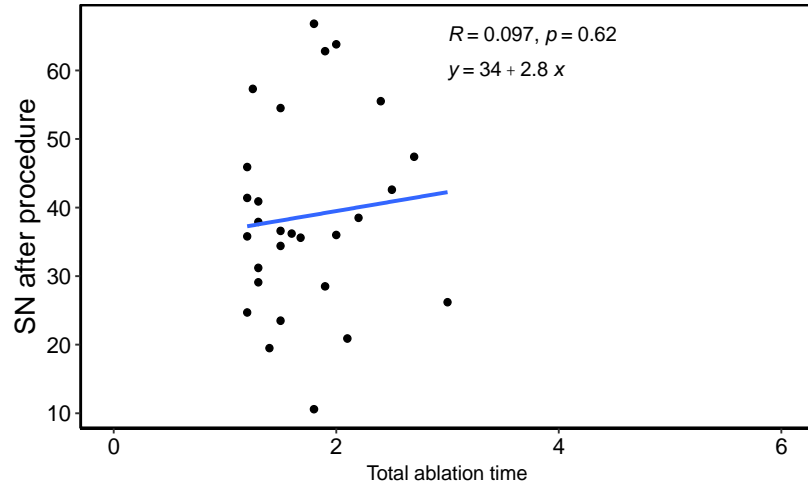


SN/počet ablačních bodů

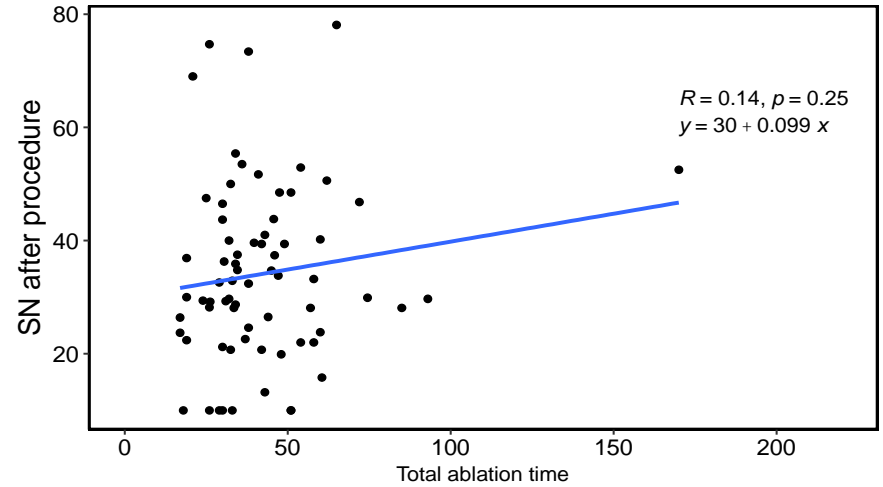


SN/ablační čas

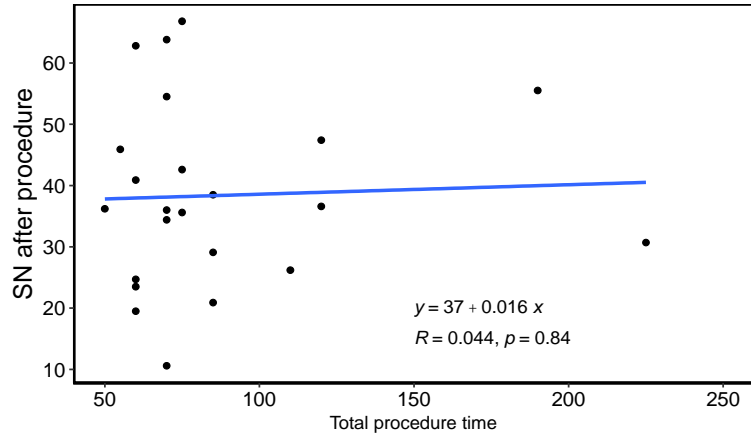
PFA, N=39



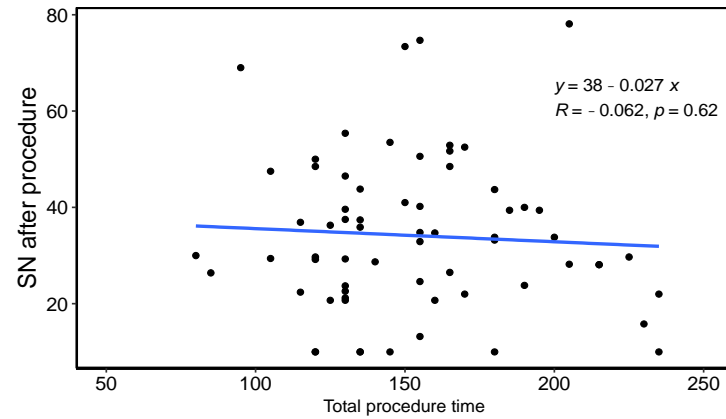
RFA, N=98



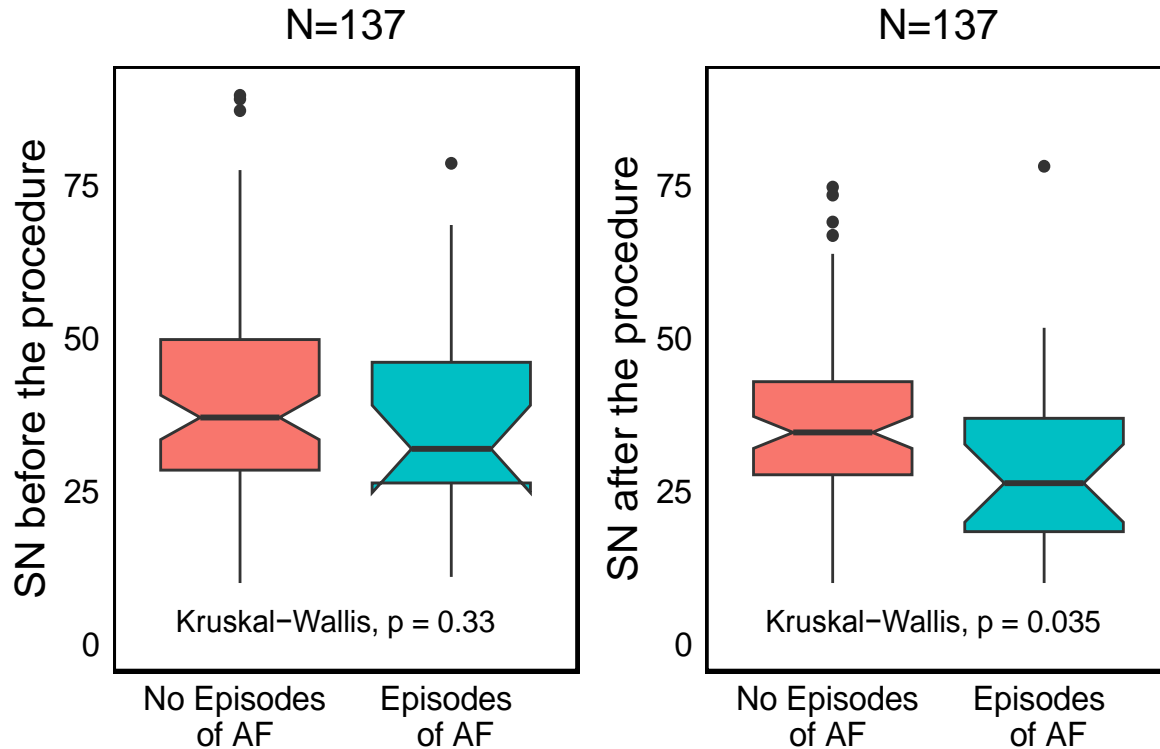
PFA, N=39



RFA, N=98

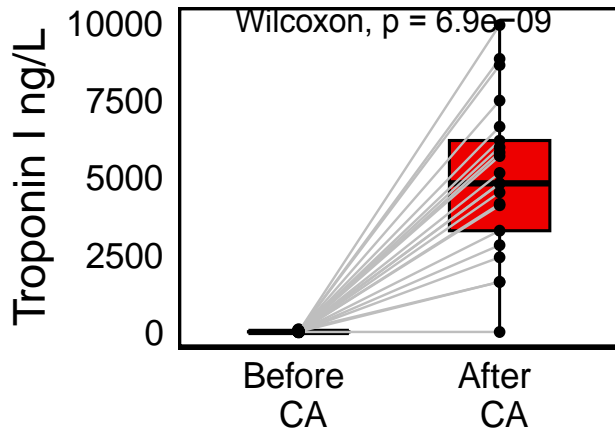


Vztah rekurencí AF a hodnot SN

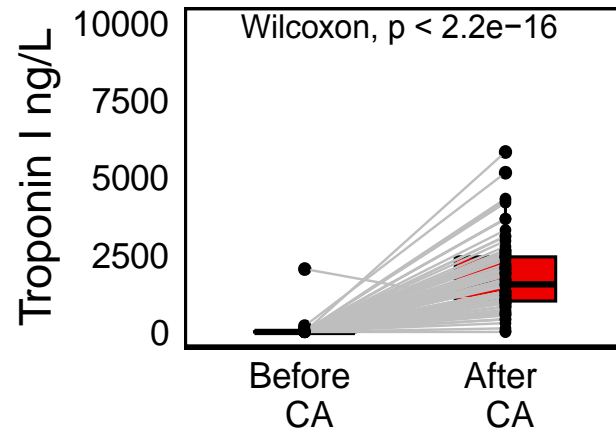


Markery
poškození
/přetížení

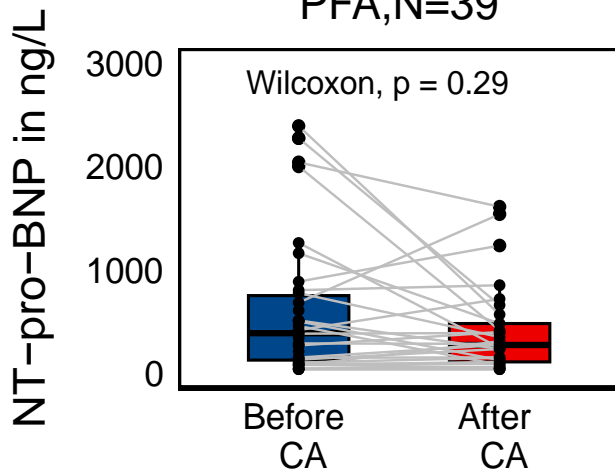
PFA, N=39



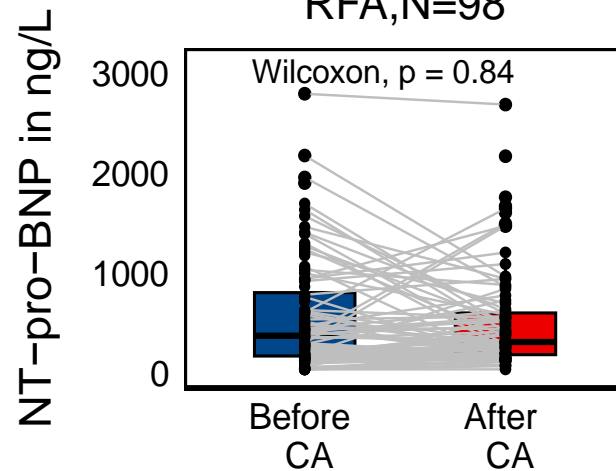
RFA, N=98



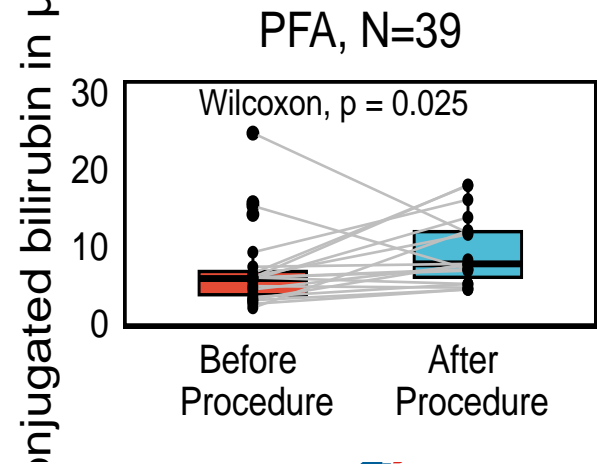
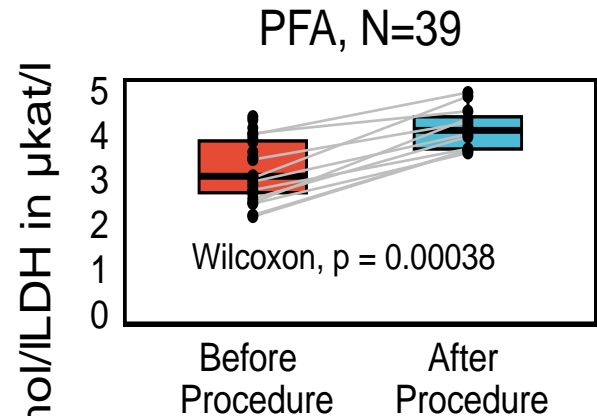
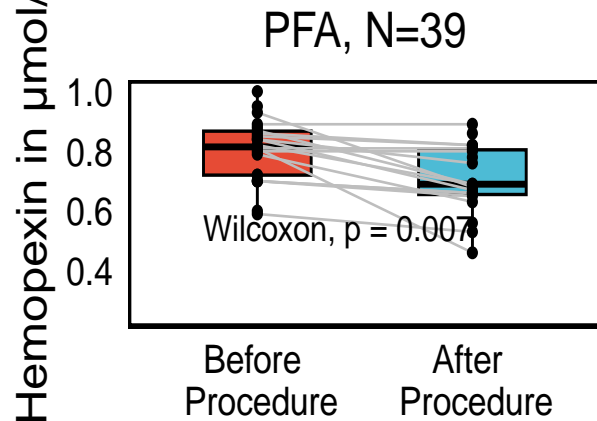
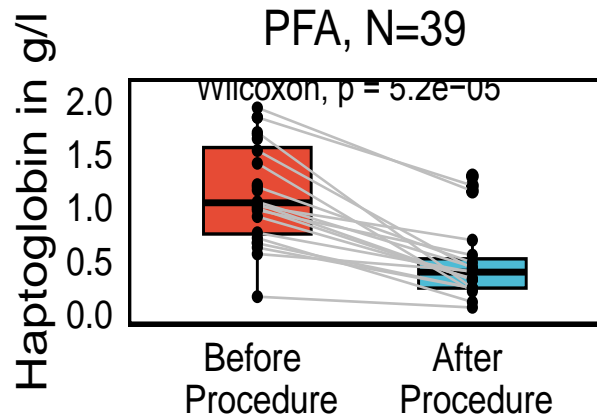
PFA, N=39



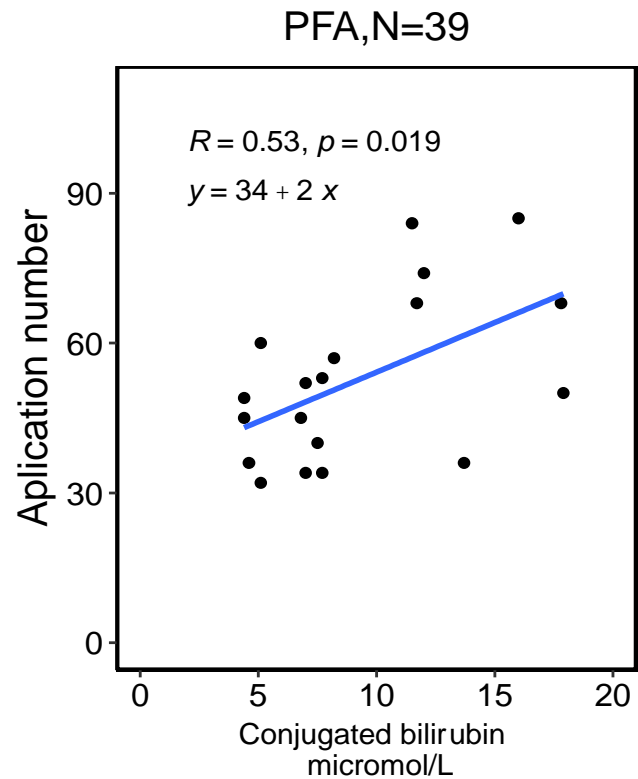
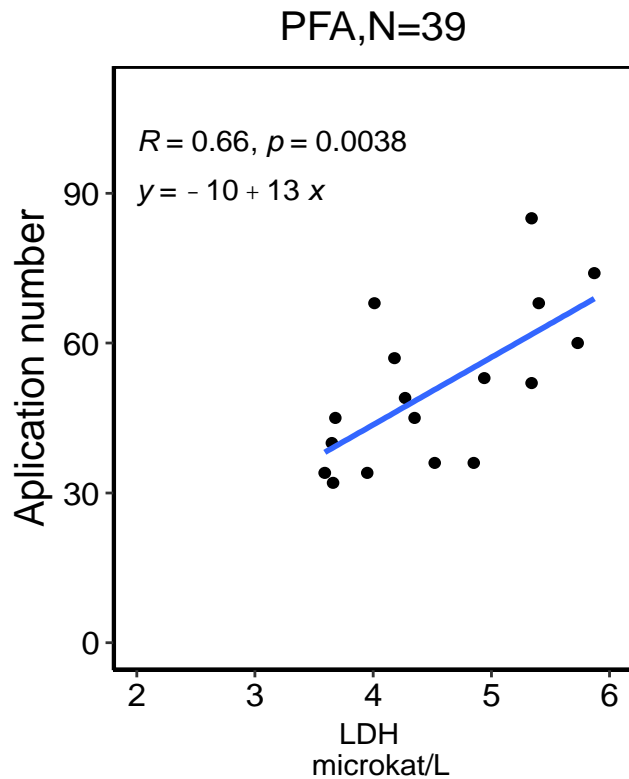
RFA, N=98

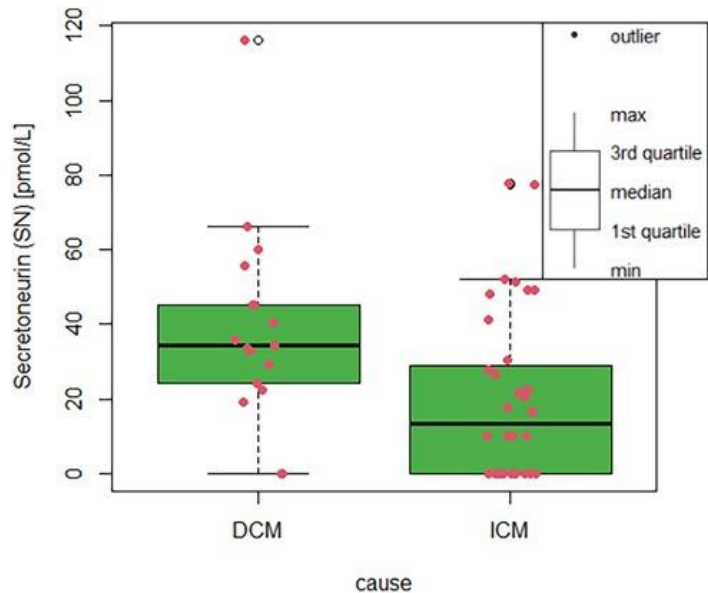


Markery hemolýzy

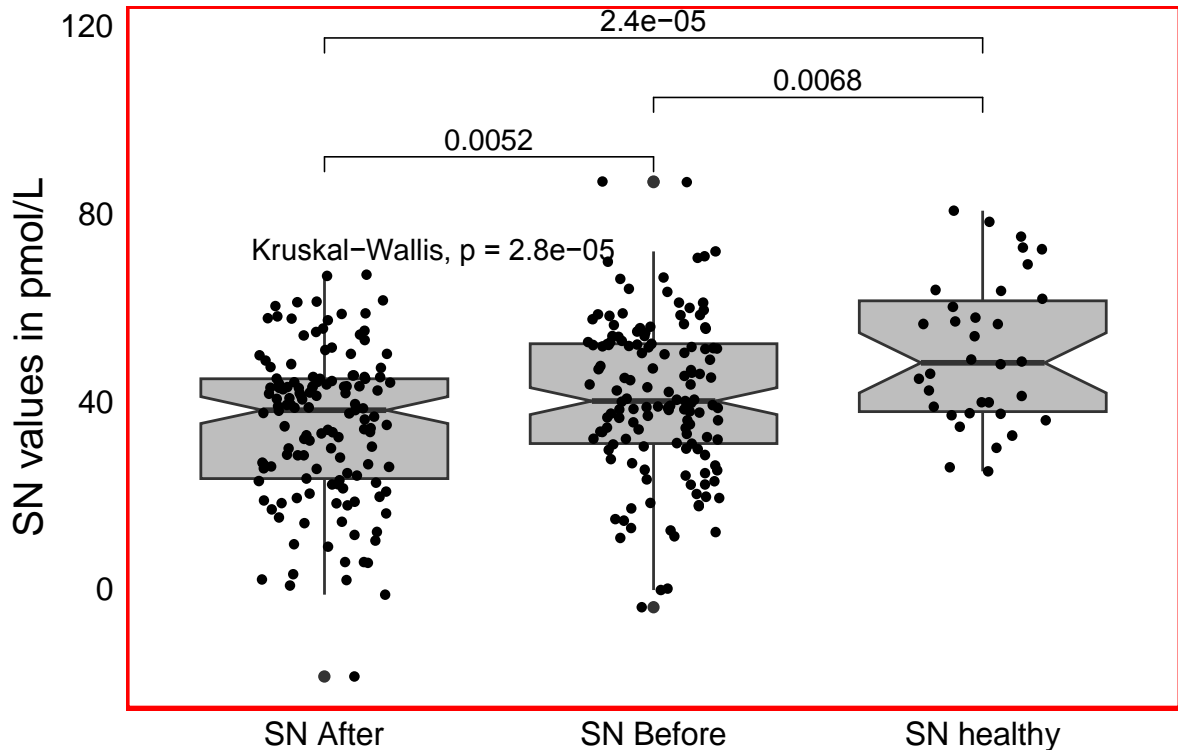


Markery hemolýzy





Plášek J et al. *Front Cardiovasc Med*
2023;10:fcv.2023.1297900



Srovnání se zdravými jedinci

Diskuze

- Po CABG vyšší hladiny SN u zemřelých (173 vs. 143 pmol/L)¹
- Zvýšený SN = Zvýšená mortalita u pac. s Ao stenózou²
- U CPVT nezávisle od epizod KT bazálně zvýšená hladina SN³
- U kriticky nemocných byl SN prediktor mortality nezávislý na ostatních faktorech včetně věku⁴

1. Brynildsen J et al. *Crit Care med* **2019**;47(5):e412-e419. 2. *Clin Biochem* **2019**;71:17-23. 3. Ottesen AH et al. *Circ Arrhythm Electrophysiol.* **2019**;12:007045 4. Røsjø H et al. *Crit Care* **2016**;44(10):1882-90.

Závěr

- snížení SN známkou stunningu LS po ablaci?
- snížení SN v kontextu anomální homeostázy kalcia?
- Není rozdíl mezi SN z LA/CS
- Zdraví jedinci produkují vyšší hodnoty SN než pacienti s FS
- U PFA není změna v SN (pre-,postprocedurálně)
- Nižší hodnota SN post procedurálně je asociovaná s rekurencí FS
- Po PFA větší elevace Tnl + zn. Hemolýzy (NT-pro-BNP beze změn)

SN1/2 interakce

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	18.4863	4.8053	3.847	0.000229 ***
SN2	0.6316	0.1286	4.913	4.23e-06 ***
rhythm	4.4616	8.4966	0.525	0.600859
SN2:rhythm	-0.1984	0.2117	-0.937	0.351249

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 15.07 on 86 degrees of freedom
Multiple R-squared: 0.2641, Adjusted R-squared: 0.2385
F-statistic: 10.29 on 3 and 86 DF, p-value: 7.398e-06

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	25.0249	3.8700	6.466	5.85e-09 ***
SN2	0.4420	0.1004	4.404	3.05e-05 ***
rhythm	-30.9501	8.3214	-3.719	0.000355 ***
SN1:rhythm	0.7288	0.1967	3.705	0.000373 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 14.06 on 86 degrees of freedom
Multiple R-squared: 0.359, Adjusted R-squared: 0.3366
F-statistic: 16.05 on 3 and 86 DF, p-value: 2.265e-08

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	31.54682	2.14708	14.69	<2e-16 ***
SN1	0.11131	0.03323	3.35	0.0012 **
aftype	-24.01826	1.75620	-13.68	<2e-16 ***
SN2:aftype	0.64525	0.02697	23.93	<2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 4.898 on 86 degrees of freedom
Multiple R-squared: 0.9059, Adjusted R-squared: 0.9026
F-statistic: 275.9 on 3 and 86 DF, p-value: < 2.2e-16

Predikované SN2 interakce věk*rhythmus

