Regional cerebral oxygen saturation (rScO2) in a cardiac muscarinic receptor overexpression rabbit model.

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Introduction:
Near infrared spectroscopy (NIRS) can be used as a noninvasive monitoring technique for regional cerebral oxygenation (rScO2).

We studied basal rScO2, after atropin blockade, and after hypertensive test by phenylephrin in a cardiac muscarinic receptor overexpression rabbit strain (H) with severe cardiac pauses compared to a normal rabbits strain (N).

Results:
1) rScO2 values are systematically higher in H rabbits compared to N rabbits:
(H = 75.6 % ± 5.6 vs N = 60.7 % ± 5.7, n = 6 in both groups, p< 0.05).
2) Atropin decrease rScO2 in both groups, but this reduction is more marked in H rabbits.
3) During the phenylephrin test, the cardiac pauses in H group are longer than in N group (H: 24 285 ms ± 8 837 (n=6) vs N: 3 566 ms ± 1 455 (n = 8)).

We observed a progressive hypoxia with rScO2 decrease in both groups during the test.

Unexpectedly, the rScO2 reduction is less in H rabbits with severe cardiac pauses than in N group.

Conclusion:
These data support the hypothesis that:
A higher rScO2 by NIRS could reflect a higher central muscarinic receptor density, protecting brain against hypoxia.
RScO2 could be a non invasive muscarinic receptor overexpression marker, useful in vasovagal syncope study.