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RETINAL CHANGES IN THE COHEN-ROSENTHAL DIABETIC (NON-INSULIN-DEPENDENT) HYPERTENSIVE RAT MODEL.
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Objective: To study the retinal changes in the Cohen-Rosenthal Diabetic (Non-Insulin-Dependent) Hypertensive Rat Model (CRDH), a spontaneously diabetic, hypertensive strain with nephropathy and cardiomyopathy.

Methods: The retinas of CRDH rats, Cohen diabetic rats (CDR) and normal Wistar Kyoto (WKY) rats were compared at 1, 3, 6 and 18 months. Morphological analysis was done by light microscopy and retrograde labeling of retinal ganglion cells with lipophilic neurotracer dye.

Results: Light microscopy of the retinal sections from 3-month-old CRDH rats demonstrated reduction in the thickness of the outer plexiform and outer nuclear layers compared to age-matched WKY rats. Retinal degeneration increased progressively in the CRDH retinas at 6 and 18 months, at which times the retinas were thinner, the outer nuclear layer was extensively atrophic, and the number of surviving ganglion cells evidenced by retrograde labeling was markedly reduced. These findings were more extensive in 18-month-old CRDH rats than in age-matched WKY rats. There were no clear differences in the genetically diabetic hypertensive rat strain (CRDH) than in the WKY rats of all ages.

Conclusions: There is an accelerated rate of retinal neurodegeneration in diabetic rats of these specific species. These changes are more extensive in the genetically diabetic hypertensive rat strain (CRDH) than in the isolated diabetes model (CDR) and the normal rats (WKY). Diabetic retinal changes in the CRDH rat model are accelerated by hypertension.

Fig 1. Whole-mounted retina with retrogradely labeled ganglion cells. A) Diabetic hypertensive rat, 18 months old; B) normal rat, same age.
Fig 2. Whole-mounted retina with retrogradely labeled ganglion cells. A) Diabetic hypertensive rat, 6 months old; B) normal rat, same age.

Key Words: Diabetic Hypertensive Rats, Retinal Neurodegeneration.
with the standard immune-enzyme method (ELISA), titres of antibodies to
mild AH stage 1 (without target organs injury). For research purpose the
acute myocardial infarctions; control group included 10 patients with
severe AH (stage 3), complicated with cerebral ischemic insults and
myocardial, renal, cerebral and vascular intima antigents were signi-
cantly correlated to the diastolic blood pressure in the 2nd group
1 st group. Isotypes of IgG-AKL and IgM-AKL antibodies increased in 5
patients with MS. Either level of IgG-AKL and IgM-AKL or antititumae, an-
renal, antymyocardial and anticerbral antigens was respective to AH
stage showing dependances between target organs failure and immune
disorders.

Key Words: Metabolic Syndrome, Arterial Hypertension, Antiphospho-
lipid Syndrome

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ACE INHIBITION AMELIORATES CARDIAC
STEATOSIS IN OBESE ZUCKER RATS
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Cardiac steatosis, like hepatic and insular steatosis, is followed by a
progressive increase in extracellular matrix expansion and fibrosis. Ad-
ditionally, cardiac lipotoxicity has been reported in obese Zucker rats
(OZR), which is a well-known animal model of metabolic syndrome X.
Since renin angiotensin system is involved in the pathogenesis of the
metabolic syndrome, the objective of the present study was to evaluate
whether ACE inhibition by Ramipril (R) can ameliorate lipid deposit in
cardiomyocytes of obese Zucker rats (OZR), beyond controlling blood
pressure (BP). G1 OZR; G2 OZR+R; G3 OZR+Amlodipine (AML);
and G4 lean Zucker rats (LZR) as control. G2 with R 1 mg/kg/day and G3
with AML 3mg/kg/day for 6 months. Hearts were processed for light
microscopy. In order to determine lipid deposit in cardiomyocytes
(LDCM), Oil red was performed. We evaluated: a) systolic blood pres-
sure (SBP) mmHg; b) insulin/glucose ratio (I/G ratio); c) serum triglyc-
cerides (TG) mmol/l; d) LDCM (% positive staining by Oil red )/area; e) LDCM /
TG ratio. At the end of the experiment: a)SBP = G1:153.1* ±
3.7; G2: 125.9 ± 2.5; G3: 124.1 ± 1.5; G4: 123.4 ± 1.7; b) I/G ratio= 
G1:60.1 ± 5.1**; G2: 44.7 ± 5.7; G3: 62.1 ± 6.4**; G4: 8.2 ± 2.4; c) 
TG= G1:11.2 ± 2.2*; G2: 7.3 ± 1.4; G3: 10.9 ± 1.8**; G4: 0.3 ± 0.1;

Background: There is no clear concept concerning the role of immune
disorders in pathogenesis of metabolic syndrome (MS). The aim of the
study was to evaluate the levels of antiphospholipid antibodies depend-
ently of arterial hypertension (AH) stages and hypertension’s complic-
ations appearance in patients with verified MS.

Method: 55 patients with MS were involved into the study (30 men and
25 women, mean 48.4±4.1 years old); the 1st group included 25 patients
with MS and moderate AH; the 2nd group – 20 patients with severe
AH (stage 3), complicated with cerebral ischemic insults and acute
myocardial infarctions; control group included 10 patients with
mild AH stage 1 (without target organs injury). For research purpose the
antibodies to cardioline (AKL) isotypes IgG and IgM were typhied
with the standard immune-enzyme method (ELISA), titres of antibodies
to myocardial, renal, cerebral and vascular intima antigents were inves-
tigated.

Results: In patients of the 1st group average systolic blood pressure
(SBP) was 180.0±10.3 Hg mm., diastolic blood pressure (DBP) was
105.0±8.7 Hg mm., in the 2nd group – SBP was 205±21.8 Hg mm., DBP
– 110.5±10.1 Hg mm.

Isotype of IgMG-AKL antibodies’ increasing was in 5 patients of the
1st group. Isotypes of IgG-AKL and IgM-AKL antibodies increased in 5
and 4 patients of the 2nd group, accordingly. The titres of antibodies
to myocardial, renal, cerebral and vascualrs intima antigents were signifi-
cantly higher in the patients of the 1st and 2nd groups comparatively to
the control group (p<0.05). Level of antibodies to target-organs antigens
most closely correlated to the diastolic blood pressure in the 2nd group
(the highest correlation indices to the all research target-organs). Smaller
but still strong correlation coefficients of DBP to target-organs antigens
antibodies were in 1st group. The power of correlative relations between
antiphospholipid antibodies levels to target-organs antigens depends on
arterial blood pressure level and AH’s complications appearance in
patients with MS.

Conclusion: Antiphospholipid antibodies were found in 31% patients
with MS. Either level of IgG-AKL and IgM-AKL or antititumae, an-
renal, antymyocardial and anticerbral antigens was respective to AH
stage showing dependences between target organs failure and immune
disorders.

Key Words: Metabolic Syndrome, Arterial Hypertension, Antiphospho-
lipid Syndrome

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ORLISTAT-INDUCED WEIGHT LOSS CONTRIBUTES
TO MORE EFFECTIVE BLOOD PRESSURE CONTROL
IN TREATED OBESE ESSENTIAL HYPERTENSIVE
SUBJECTS
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In the present study, we aimed at determining whether orlistat adminis-
tration, plus mild caloric restriction, can have beneficial effects on blood
pressure (BP) levels, in obese patients with inadequately controlled
essential hypertension.