Preeklamptik Gebelerde Plazma Renalaz Düzeyinin Preeklampsi Şiddeti ve Zamanı ile İlişkisi

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J Perinat Med. 2014 Mar;42(2):233-7. doi: 10.1515/jpm-2013-0096.

Preeclampsia is caused by continuous sympathetic center excitation due to an enlarged pregnant uterus.

Maeda K.

Abstract

AIMS: To deduce the origin of preeclampsia characterized by hypertension and proteinuraia on the basis of results from animal studies and its therapeutic strategies.

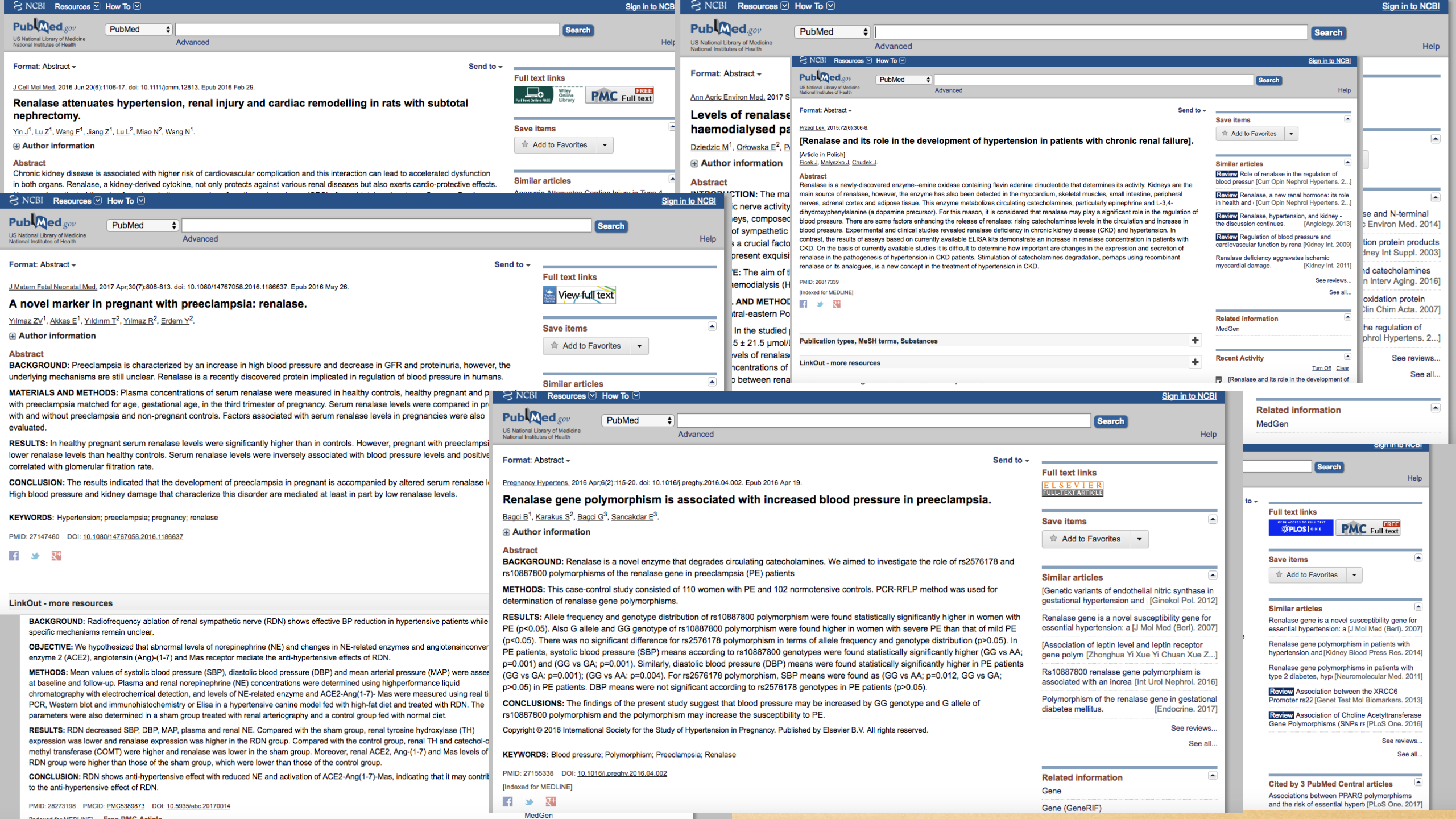
METHODS: Sympathetic and parasympathetic zones of female non-pregnant rabbit brain were stimulated electrically with Kurotu's electrodes. Systolic blood pressure, urine volume, and proteinuria were evaluated before and after the stimulation of autonomic zones.

RESULTS: Excitation, hypertension, urine reduction, cloudy urine, and proteinuria were observed following stimulation of the sympathetic zone. A stable state, low blood pressure, increased urine volume, and no proteinuria were observed following stimulation of the parasympathetic zone.

CONCLUSION: Hypertension and proteinuria in preeclampsia are caused by continuous stimulation of the sympathetic nervous center in the hypothalamus through the innervation between the enlarged uterus and hypothalamus in the latter stages of pregnancy or in a complete hydatidiform mole. Future studies are needed to address the potential of pharmacological suppression of an overactive sympathetic nerve system.

PMID: 23846133 DOI: 10.1515/jpm-2013-0096

[Indexed for MEDLINE]



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J Cell Mol Med. 2016 Jun;20(6):1106-17. doi: 10.1111/jcmm.12813. Epub 2016 Feb 29.

Renalase attenuates hypertension, renal injury and cardiac remodelling in rats with subtotal nephrectomy.

Yin J[1], Lu Z[1], Wang F[1], Jiang Z[1], Lu L[2], Miao N[2], Wang N[1].

Author information

Abstract

Chronic kidney disease is associated with higher risk of cardiovascular complication and this interaction can lead to accelerated dysfunction in both organs. Renalase, a kidney-derived cytokine, not only protects against various renal diseases but also exerts cardio-protective effects.

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Levels of renalase haemodialysed pa

Dziedzic M[1], Orłowska E[2], P

Author information

Abstract

Przegl Lek. 2015;72(6):306-8.

[Renalase and its role in the development of hypertension in patients with chronic renal failure].

[Article in Polish]

Ficek J, Małyszko J, Chudek J.

Abstract

Renalase is a newly-discovered enzyme--amine oxidase containing flavin adenine dinucleotide that determines its activity. Kidneys are the main source of renalase, however, the enzyme has also been detected in the myocardium, skeletal muscles, small intestine, peripheral nerves, adrenal cortex and adipose tissue. This enzyme metabolizes circulating catecholamines, particularly epinephrine and L-3,4-dihydroxyphenylalanine (a dopamine precursor). For this reason, it is considered that renalase may play a significant role in the regulation of blood pressure. There are some factors enhancing the release of renalase: rising catecholamines levels in the circulation and increase in blood pressure. Experimental and clinical studies revealed renalase deficiency in chronic kidney disease (CKD) and hypertension. In contrast, the results of assays based on currently available ELISA kits demonstrate an increase in renalase concentration in patients with CKD. On the basis of currently available studies it is difficult to determine how important are changes in the expression and secretion of renalase in the pathogenesis of hypertension in CKD patients. Stimulation of catecholamines degradation, perhaps using recombinant renalase or its analogues, is a new concept in the treatment of hypertension in CKD.

PMID: 26817339

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Renalase deficiency aggravates ischemic myocardial damage. [Kidney Int. 2011]

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J Matern Fetal Neonatal Med. 2017 Apr;30(7):808-813. doi: 10.1080/14767058.2016.1186637. Epub 2016 May 26.

A novel marker in pregnant with preeclampsia: renalase.

Yılmaz ZV[1], Akkaş E[1], Yıldırım T[2], Yılmaz R[2], Erdem Y[2].

Author information

Abstract

BACKGROUND: Preeclampsia is characterized by an increase in high blood pressure and decrease in GFR and proteinuria, however, the underlying mechanisms are still unclear. Renalase is a recently discovered protein implicated in regulation of blood pressure in humans.

MATERIALS AND METHODS: Plasma concentrations of serum renalase were measured in healthy controls, healthy pregnant and p with preeclampsia matched for age, gestational age, in the third trimester of pregnancy. Serum renalase levels were compared in pr with and without preeclampsia and non-pregnant controls. Factors associated with serum renalase levels in pregnancies were also evaluated.

RESULTS: In healthy pregnant serum renalase levels were significantly higher than in controls. However, pregnant with preeclampsi lower renalase levels than healthy controls. Serum renalase levels were inversely associated with blood pressure levels and positive correlated with glomerular filtration rate.

CONCLUSION: The results indicated that the development of preeclampsia in pregnant is accompanied by altered serum renalase l High blood pressure and kidney damage that characterize this disorder are mediated at least in part by low renalase levels.

KEYWORDS: Hypertension; preeclampsia; pregnancy; renalase

PMID: 27147460 DOI: 10.1080/14767058.2016.1186637

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Pregnancy Hypertens. 2016 Apr;6(2):115-20. doi: 10.1016/j.preghy.2016.04.002. Epub 2016 Apr 19.

Renalase gene polymorphism is associated with increased blood pressure in preeclampsia.

Bagci B[1], Karakus S[2], Bagci G[3], Sancakdar E[3].

Author information

Abstract

BACKGROUND: Renalase is a novel enzyme that degrades circulating catecholamines. We aimed to investigate the role of rs2576178 and rs10887800 polymorphisms of the renalase gene in preeclampsia (PE) patients

METHODS: This case-control study consisted of 110 women with PE and 102 normotensive controls. PCR-RFLP method was used for determination of renalase gene polymorphisms.

RESULTS: Allele frequency and genotype distribution of rs10887800 polymorphism were found statistically significantly higher in women with PE ($p<0.05$). Also G allele and GG genotype of rs10887800 polymorphism were found higher in women with severe PE than that of mild PE ($p<0.05$). There was no significant difference for rs2576178 polymorphism in terms of allele frequency and genotype distribution ($p>0.05$). In PE patients, systolic blood pressure (SBP) means according to rs10887800 genotypes were found statistically significantly higher (GG vs AA; $p=0.001$) and (GG vs GA; $p=0.001$). Similarly, diastolic blood pressure (DBP) means were found statistically significantly higher in PE patients (GG vs GA: $p=0.001$); (GG vs AA: $p=0.004$). For rs2576178 polymorphism, SBP means were found as (GG vs AA; $p=0.012$, GG vs GA; $p>0.05$) in PE patients. DBP means were not significant according to rs2576178 genotypes in PE patients ($p>0.05$).

CONCLUSIONS: The findings of the present study suggest that blood pressure may be increased by GG genotype and G allele of rs10887800 polymorphism and the polymorphism may increase the susceptibility to PE.

KEYWORDS: Blood pressure; Polymorphism; Preeclampsia; Renalase

PMID: 27155338 DOI: 10.1016/j.preghy.2016.04.002

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Rs10887800 renalase gene polymorphism is associated with an increa [Int Urol Nephrol. 2016]

Polymorphism of the renalase gene in gestational diabetes mellitus. [Endocrine. 2017]

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BACKGROUND: Radiofrequency ablation of renal sympathetic nerve (RDN) shows effective BP reduction in hypertensive patients while specific mechanisms remain unclear.

OBJECTIVE: We hypothesized that abnormal levels of norepinephrine (NE) and changes in NE-related enzymes and angiotensinconver enzyme 2 (ACE2), angiotensin (Ang)-(1-7) and Mas receptor mediate the anti-hypertensive effects of RDN.

METHODS: Mean values of systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) were asses at baseline and follow-up. Plasma and renal norepinephrine (NE) concentrations were determined using highperformance liquid chromatography with electrochemical detection, and levels of NE-related enzyme and ACE2-Ang(1-7)- Mas were measured using real ti PCR, Western blot and immunohistochemistry or Elisa in a hypertensive canine model fed with high-fat diet and treated with RDN. The parameters were also determined in a sham group treated with renal arteriography and a control group fed with normal diet.

RESULTS: RDN decreased SBP, DBP, MAP, plasma and renal NE. Compared with the sham group, renal tyrosine hydroxylase (TH) expression was lower and renalase expression was higher in the RDN group. Compared with the control group, renal TH and catechol-c methyl transferase (COMT) were higher and renalase was lower in the sham group. Moreover, renal ACE2, Ang-(1-7) and Mas levels of RDN group were higher than those of the sham group, which were lower than those of the control group.

CONCLUSION: RDN shows anti-hypertensive effect with reduced NE and activation of ACE2-Ang(1-7)-Mas, indicating that it may contrit to the anti-hypertensive effect of RDN.

PMID: 28273198 PMCID: PMC5389873 DOI: 10.5935/abc.20170014

Renalaz

- En çok böbrek, kalp ve iskelet kasında
- Dolaşımdaki katekolaminleri indirgediği için

	Şiddetli Preeklampsi (n:30)	Hafif Preeklampsi (n:29)	Normotansif (n:31)	
	Ort.±SD	Ort.±SD	Ort.±SD	p
Yaş	30,0±7,1	29,7±6,6	25,7±4,5	0,024
Sistolik TA	166,3±13,0	146,9±8,5	117,1±11,0	<0,001
Diyastolik TA	111,7±10,5	93,4±5,5	68,7±9,9	<0,001
Ağırlık (Kg)	83,3±12,0	86,2±11,0	80,4±8,4	0,115
Boy (M)	1,60±0,06	1,59±0,08	1,58±0,08	0,681
BMI	32,8±5,6	34,3±5,7	32,4±4,8	0,378
Gebelik Haftası	35,3±2,9	37,2±2,1	36,9±1,9	0,021
Gebelik	2,53±1,87	2,52±1,55	2,32±1,11	0,941
Parite	1,13±1,41	1,25±1,27	0,84±0,93	0,518
Abort	0,40±1,13	0,31±0,66	0,45±0,77	0,334
Yaşayan	1,13±1,41	1,17±1,26	0,81±0,95	0,568
Üre	11,2±6,5	9,2±3,8	8,1±2,5	0,198
Kreatinin	0,81±0,45	0,69±0,10	0,66±0,12	0,061
Hgb	11,4±1,8	11,2±1,6	11,4±1,3	0,779
PLT	234366,7±73461,0	244517,2±61996,9	242903,2±83076,0	0,696
WBC	12090,0±4541,9	11451,7±4907,5	11954,8±2639,3	0,200
AST	43,3±65,9	24,1±8,4	26,4±10,1	0,520
ALT	30,5±50,9	15,0±7,6	11,4±4,4	0,173

	Şiddetli Preeklampsi (n:30)	Hafif Preeklampsi (n:29)	Normotansif (n:31)	
	Ort.±SD	Ort.±SD	Ort.±SD	p
Renalaz Düzeyi (ng/ml)	95,4±90,4	66,5±41,6	135,6±139,9	0,039

Erken Başlangıçlı (n:23)	Geç Başlangıçlı (n:36)
97,34	83,18

Tablo 10. Renalaz Düzeyinin Değerlendirilen Parametrelerle İlişkisi

	RENALAZ Düzeyi (ng/ml)	
	r	p
Yaş	-0,285	0,006
Sistolik TA	-0,145	0,173
Diyastolik TA	-0,110	0,300
Ağırlık (Kg)	-0,130	0,222
Boy (M)	-0,171	0,107
BMI	-0,039	0,718
Gebelik Haftası	0,063	0,557
Gebelik	-0,046	0,670
Parite	-0,068	0,524
Abort	-0,067	0,529
Yaşayan	-0,064	0,547
Üre	0,093	0,381
Kreatinin	0,073	0,497
İdrar Protein	-0,160	0,132
Hgb	-0,169	0,110
PLT	0,075	0,480
WBC	0,096	0,368
AST	0,110	0,303
ALT	0,003	0,980

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