

**Tuksanova D.I., Avakov V.E., Najmutdinova D.K., Negmatulleva M.N.,  
Akhmedov F.K.**

**The correlation features renal and hepatic blood flow in pregnant women  
with preeclampsia**

(Bukhara State Medical Institute, Department of "Obstetrics Gynecology» № 1 Head of  
Department prof. Negmatullaeva )

The study of renal blood flow in 30-34 weeks gestation Doppler method we conducted in 90 pregnant women. Renal and hepatic blood flow was investigated using duplex scanning mode pulse-wave and color Doppler Sono-scape SSI 5000 (China model) sectoral sensor frequency 3.5 MHz. With increasing severity of PE continued to increase resistance of the intrarenal segmental and interlobar arteries, indicating a significant increase in the resistance of the intrarenal arteries, decrease in renal blood flow, and the deterioration of renal function. In vessels hepatic was found a similar pattern of changes of the index resistance result vascular. The reliable difference between the groups was found similar changes in resistance index ( $P < 0.05$ ). Thus, the assessment of renal, hepatic blood flow can identify systemic hemodynamic disturbances in pregnant women with PE and These correlate with the severity of preeclampsia. High values of resistance index and systolic and diastolic relations in the arteries and veins of the liver and kidney should be seen as a predictor of progression to severe PE to its clinical manifestation, an indication for revision of tactics and choice of method of delivery, since the sensitivity of diagnosis of 89.9%, a specificity of 92, 1%. Comprehensive survey of pregnant women with PE, which include Doppler hepatic vessels and kidneys, identifies systemic hemodynamic, assess the severity of preeclampsia and to choose a rational tactics.

Preeclampsia (PE) is an important problem of modern obstetrics, which is associated not only with the frequency of this complication of pregnancy, but also with those complications for mother and child, which are observed in this pathology [2,7,11,15].

As is known, by leading clinical manifestations of preeclampsia are the formation of hypertensive and edematous - protein uric syndromes [4,7,6,12,].

The characteristic features of severe forms of PE are to increase the capacity of blood coagulation, fibrinolytic activity depletion, the development of microangiopathic hemolysis caused by mechanical destruction of red blood cells in a partially or totally occluded vessels of terminal kidney, liver, lung, brain, placenta [1,3,10,14].

In this clinical signs of liver disease usually absent. This can lead to severe complications such as HELLP - syndrome, the most severe form of the current PE,

indicating an extreme degree of maladjustment systems of the mother in an attempt to meet the needs of the fetus [9,11,12,19].

A great help in predicting pregnancy outcome in PE is a renal ultrasound - hepatic blood flow in combination with color Doppler.

**Objective:** the study of hemodynamic characteristics in the vessels of the liver and kidneys of pregnant women with PE to predict systematic violations of blood flow and outcome of pregnancy.

### **Materials and methods.**

The basis of this work the results of the survey 90 pregnant women in the clinical maternity hospital number 2 of Bukhara in Uzbekistan. The study of renal and hepatic blood flow in the gestation period of 30-34 weeks Doppler method we conducted in 90 pregnant women. The main group included 30 pregnant women with mild flow of PE (II-group), 30 pregnant women with severe course of PE (III-group), the control group (I) consisted of 30 women with physiological pregnancy. Renal and hepatic blood flow was investigated using duplex scanning mode pulsed - of the wave and color Doppler Sono-scape SSI 5000 (China model) sectoral sensor frequency 3.5 MHz in 30-34 weeks of gestation. By age groups were identical. The average age was  $23,5 \pm 3,4$  g Extra genital pathology was found in 90% of pregnant II-nd and III-rd group and in 70% of pregnant control group. In all groups, prevailed patients with anemia of chronic kidney disease and the endocrine system. Kidney disease was up to 21% of us stated the frequency of which EGZ-gestational pyelonephritis -7.8% and 13.2% of asymptomatic bacteriuria. In the control group, basically pregnant women suffered from chronic iron deficiency anemia. Laboratory diagnosis included biochemical studies of the liver and kidneys with the definition of bilirubin, alkaline phosphatases, ALT, AST. The data obtained were subjected to statistical analysis on a PC Pentium-IV using the software package Microsoft office Excel-2003, including the use of built-in functions and statistical processing «Biostatistics» for Windows (version 2007).

## Research findings and discussion.

Given the large variety of parameters obtained at Doppler renal vessels, as well as the prevalence of PE in the pathogenesis of generalized spasm of resistive vessels with increased vascular resistance and to a greater extent these occur in the kidneys, we decided to stay for only on the Doppler index RI characterizes resistance of the vascular system of the kidneys. To assess the preferential location altered renal vascular resistance index RI we determined in the distal segment of the renal artery, at the level of the segmental arteries and inter share artery.

The table below shows the state of renal vascular resistance in we studied pregnant women with physiological pregnancy, preeclampsia mild and severe.

**Table number 1**

**Indicators of vessels of kidneys resistance of the groups of pregnant women at term gestation 30-34 weeks (n=90).**

indicators	I group n =30	II group n = 30	III group n =30
RI			
1. distal renal artery	0,66±0,02 (0,63-0,67)	0,65±0,01 (0,64-0,66)	0,65±0,02 (0,62-0,69)
2. segmental artery	0,61±0,01 (0,59-0,62)	0,67±0,02* (0,65- 0,70)	0,72±0,01×^ (0,68-0,74)
3. interlobar artery	0,56±0,01 (0,52-0,58)	0,61±0,02* (0,60-0,67)	0,66±0,01×^ (0,61-0,65)

**Note: In parentheses are the scatters of the studied parameters in groups**

**x - the accuracy of the data between groups II and III p <0,05**

**^ - Reliability of data between Group III and control p <0,05.**

**\* - Significance between the groups I and II  $p < 0,05$**

By analyzing the listed data on renal vascular resistance index, it should be noted that patients with physiological pregnancy tone of the distal renal artery was significantly exceeds the the intrarenal vascular resistance (segmental and interlobar arteries). That is, the resistance of the intrarenal arteries in normal pregnancy are relatively low and does not prevent the intrarenal blood flow.

In this respect, data obtained by us agree with those of many authors [1,5,8,15].

With layering PE mild generally increased renal vascular resistance index: interlobar by 8.9% ( $p < 0.05$ ) increase in the tone of the segmental renal arteries was 9.8% ( $p < 0.05$ ), while the index resistance of the distal segment of the renal artery remained virtually unchanged. With the acceleration in severity of PE continued to increase resistance of the intrarenal segmental and interlobar arteries. RI segmental and interlobar intrarenal arteries in women with severe PE flow was increased relative to those of group II by 7.0% and 7.6%, respectively ( $P$  in both cases  $< 0.05$ ). RI distal renal artery remained and was not changed by 10.7% and 1.5% below that of the intrarenal segmental and interlobar arteries, respectively. All of the above evidence of a significant increase in the resistance of the intrarenal arteries in parallel with the severity of PE, which also led to a decrease in renal blood flow, reduced renal threshold of excretion of albumin and impaired renal function, filtration and concentration, as evidenced by decreased urine output in pregnancy II and III group, relative to the control values of 26.7% and 38.0%, and the relative increase in the density of urine by 0.9 and 1.4%, respectively, at the expense of albuminuria. In the vessels of the liver was found similar pattern of changes in the value of the resistance index. In hepatic artery significantly increasing it ( $p > 0.01$ ) in the development of PE and its weighting in the veins were below its value when PE severe ( $P < 0.05$ ). As a result of our investigations it was found that systolic and diastolic ratio (LMS) is subjected to similar changes depending on the severity of PE, as well as resistance index and reflects the general patterns of changes in the resistance vessels of the organ in PE.

Thus, a comprehensive survey of pregnant women with PE, including Doppler blood vessels of the liver and kidneys, reveals organ failure hemodynamic evaluate the severity of preeclampsia. High values of resistance index and systolic and diastolic ratio in the arteries and veins of the kidneys and liver can be regarded as a predictor of severe PE to its clinical manifestation.

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