

## Immunofluorescence Study of Trophoblastic Bound Immunoglobulin G in preeclamptic women at term

Wifaq.M.AL-Watar\*MD  
 Khalida M. Mossawy\*phD  
 Wafa R..AL-Omari\*\*MRCOG  
 Warkaa Mahmood.Ali\*\*\*MD

### Summary

**J Fac Med Baghdad**  
**2005; vol.47 No. 2**  
 Received: Sep.2003  
 Accepted: July2004

**Background:** The role of humoral immunity in the pathogenesis of PET is well known so that an altered immune response could be the cause of this disease .

**Objectives:** to evaluate the role of placenta bound IgG in the pathogenesis of PET.

**Methods:** 31 pregnant women were included in this study delivered by cesarean section at Baghdad Teaching Hospital , 16 of them were diagnosed and treated for PET . while the rest 15 cases were of normal women of using direct immunoflorescent test , the level of IgG was detected .

**Result:** The study showed a significant higher level of IgG in the placental biopsy of PET cases than those of control group using t test, ( $P < 0.025$ ),

**Conclusion:** Trophoblastic bound IgG plays an important role in the pathogenesis of PET as a part of altered humoral immune response against placental tissue in those patients .

**Key words:** PET: preeclampsia , IgG: immunoglobuline. BP: blood pressure.

### Introduction

It is well known that maternal IgG subclasses cross the human placental barrier during pregnancy (1,2) reaching to syncytiotrophoblast by active transport mechanism (3) During normal pregnancy a maternal immune response will be formed toward paternal trophoblastic antigens and they are mainly of IgG molecules which will bind to trophoblastic basement membrane(4) .

Those are considered as blocking antibodies and they may prevent immunological rejection of the fetus(5).

Therefore the immunohistological studies of placental biopsies may provide valuable information about immune reaction of normal pregnancies with a possible involvement in the abnormalities of pregnancy (6) , such as preeclampsia .

PET is a common obstetric disorder , affecting mostly primigravid women (7), and defined as proteinuric hypertension of an increase in B.P up to

immunological in origin (9,10) presenting in the form of an altered immune response toward the trophoblastic tissue (11) and provoked by the exposure of paternal antigens to the maternal immune system for the first time (10) . This mainly occur when the maternal and paternal leukocyte associated antigens share common loci thus the maternal blocking antibodies will be lower than those present during normal pregnancies allowing other cytotoxic antibodies to attack the trophoblasts and other tissues resulting in PET (12,18) .

#### **Patient and methods:**

A prospective study was performed using two groups of women delivered by caesarian section at Baghdad teaching hospital . The first group included (15) healthy women with uncomplicated pregnancy i.e. normotensive with normal urinary sediment were with a gestational age ranging from 36-39 weeks, and up with caesarian section because of mechanical problems.

The second group comprised (16) women diagnosed and treated for PET and delivered by caesarian section for obstetrical indications at 35-42 weeks gestation .

Gestational age was confirmed by early ultrasonic examination A placental biopsy of one cubic cm was taken from the central cotyledon

\*Department of Microbiology , Collage of Medicine , Baghdad University, Iraq.

\*\*Dept. of Obstetric & Gynecology , College of Medicine . Baghdad University, Iraq.

\*\*\*Department of Histopathology, Collage of Dentistry, Baghdad University, Iraq.

30 mm Hg systolic and 15 mm Hg diastolic over the baseline (8) . The pathogenesis of PET could be

immediately after birth and snap frozen in liquid nitrogen to be stored at  $-30^{\circ}\text{C}$  and sectioned latter on by cryostatic microtom at a thickness of 4 micron, stained by fluorescein conjugated anti-human IgG directed against fragment crystallizable portion of IgG molecules bound to the trophoblastic basement membrane (12).

The slides were examined under U/V microscopy and the density of immunofluorescent staining was graded from one to four (13).

#### Statistical Analysis:

The student t-test was used to compare the difference between the two means of IgG antibodies deposited in the trophoblastic basement membrane of placental biopsies at a-level of significance.

#### Results:

IgG deposition was found to be higher in the placenta of patients with PET as compared to non PET patients cases with a mean value of  $(3.6 \pm 0.1)$  Vs  $(3.3 \pm 0.1)$ . the differences was statistically significant ( $P < 0.025$ ) as shown in table (1).

#### Discussion:

Pervious studies had suggested an altered humoral immune responses in the pathogenesis of PET (13) because of the presence of a circulating immune complexes (14) and or deposition of IgG type of antibodies against the trophoblastic tissue (15). In the current study pregnant women with PET had significantly higher level of IgG than in normal pregnant women, this is comparable to the finding of Vardi and Hailbrecht (15,16).

Our results showed humoral immune reactivity in PET, which may contribute, to its pathogenesis (9,17,18).

#### References:

1. Nevard. CHF & Gaunt-M. Ockleford -CD; the transfer of passive and active immunity. in the Immunology of the Fetus: 193-214.
2. Bright-NA; Ockleford - CD & Anewar-M. (1994): Ontogeny and distribution of Fc receptors in the human placenta Transport of immune Surveillance); J. Anat **189**:297-308.
3. Jalali -G3; Underwood-JL & Mowbray-JF. (1989): IgG on normal human placenta is bound to antigen and Fc receptors. transplantation proceeding, **21**:572-74.
4. Mowbray -J. Jalali - Chaonat-Q. Clark-DA; Underwood - J; All en-W.R. & Miathias - S. Maternak; (1997): Response to paternal trophoblastic antigens. ACT. J. of report. Immunol; **37**(6): 421-26.
5. Omwandho-GA; Hal-AL; Falconer-J & Roberts-TK (1997): Elution and partial characterization of immunoglobulins bound to ovine placenta. Immunol. Cell-Biol; **75**(3):231-37.
6. Weir-PE. (1981): Immunofluorescent studies of the uteroplacental arteries in normal pregnancy; B.J. Obstet. & Gynecol; **88**:301-7.
7. Philip -S; Elliot-KM; Anne.T; Michael.T; Mennuti-SG & Douglas-BC. (1999): Abnormalities in platelet antiglobulin test in PET mother and their neonate Am. J. Obstet. & Gynecol; **157**:109-13.
8. Kong-TY; Pearce-JM & Robertson -WB; (1987): Acute atherosclerosis in PET: Maternal determinants and fetal outcome in the presence of the lesion Am. J. Obstet. & Gynecol; **157**:360-63.
9. EL-Roeiby-A. & Gleicher-N; the (1991): the Relationship between autoantibodies and intrauterine growth retardation and Hypertensive disorder of pregnancy. Am. J. Obstet. & Gynecol. **164**:1253-61.
10. Akin -JW; Wayne-Bc. & Paul-dd. (1990): Increasing quantity of maternal IgG in trophoblastic tissue before the onset of normal labor; Am. J. Obstet. & Gynecol; **162**:1152-57.
11. Mac Gillivray. (1983): I. Pre-eclampsia. the hypertensive disease of pregnancy. London. Saunders: 23-55.
12. Gurka-G, Rocklin-RE. (1987): Reproductive immunology J. A. M. A. **258**(20):2985-7.
13. Rappaport VG; Hirata-G; Yap-HK. & Jordan -SC. (1990): Antiendothelial antibodies in preeclampsia. Am. J. Obstet. & Gynecol **62**(1):1436-40.
14. Massorobrio M.B; Bertini E.B (1985): immune complexes in preeclampsia and normal pregnancy. Am. J. of Obstet. & Gynecol; **152**:578-63.
15. Houwert -De-Jong-M; Gmolig-Meyling-FH. & Kalsbeck-GL. (1985): Humoral immunity in normal and complicated pregnancy. Eur. J. Obstet. & Gynecol-Repro. Biol. **19**(4):205-14.
16. Vardi J; Halbrecht-i (1974). Antigens associated with toxemia of pregnancy. Am. Obstet Gynecol. **118**(4):55-58.
17. Bettin-S; Haller-H; Wenzkowski-BW; Volk-HD & Jahn-S. (1995): immunologic parameters in women with normal pregnancy and preeclampsia. Zentralb-Gynakol. **116**(5):260-62.
18. Khabouze, S; Erchidi; I.E; Bouchikhi, -C; Chahtan, -A; Kharbach, -A. & Chaoui, -A. Gestational (2002): Gestational trophoblastic diseases. Gynecol-Obstet-Fertile. **30**(1):42-9.

Case No.	Normal women	Preeclamptic women
	IgG grade	IgG grade
1	3.5	4
2	3	4
3	3	4
4	3	3
5	4	4
6	3	4
7	2.7	3
8	3	3.5
9	4	3
10	4	4
11	3	4
12	3	3.5
13	4	3
14	3	3
15	4	4
16		4
Mean±SEM	3.36±0.1	3.66±0.1

P Value for the IgG deposit < 0.025

**Table (1): the level of IgG in normal and preeclamptic women at term**