



THE ROLE OF INTERFERON- γ IN THE DIAGNOSIS OF TOXOPLASMOSIS IN PREGNANCY

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TOXOPLASMA GONDII

- *Protozoan parasite: exists in 3 forms OOCYST, TACHYZOITE, BRADYZOITE*
- *3 genotypes (I-II-III)*
- *Epidemiology in Italy: IgG seroprevalence 20%, IgM seroprevalence 1%*

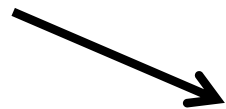
MAIN ROUTES OF INFECTION



Food contaminated with oocysts



*Contact with cat faeces,
contact with soil (vegetables)*

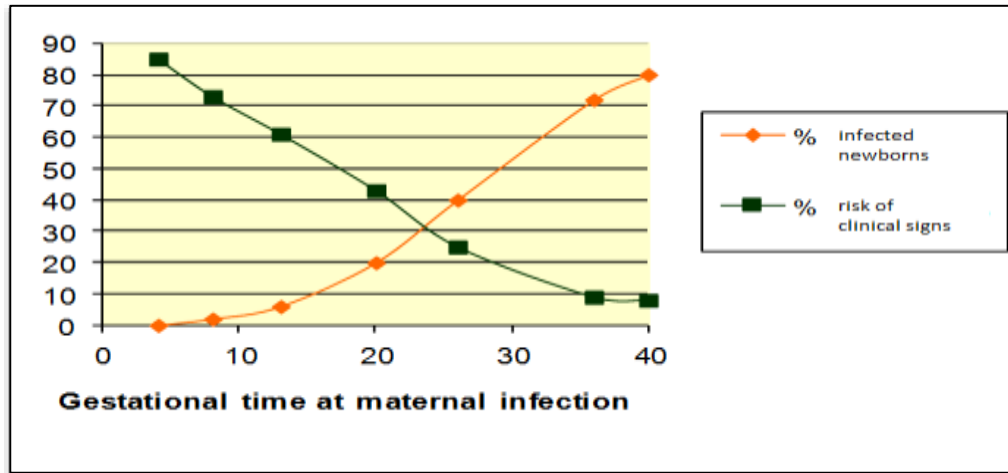


*Contaminated water
Foreign travel*



TRANSMISSION vs CLINICAL SIGNS

PRIMARY INFECTION IN PREGNANCY



Meroni V., personal communication



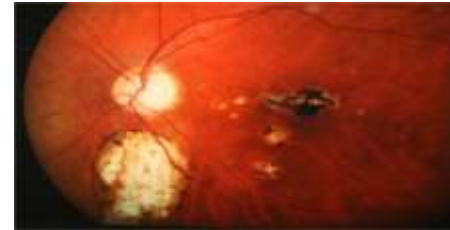
*Inverse
relationship
between
gestational age
at maternal
infection and
transmission rate*

CLINICAL FINDINGS

- ***Classic triad: hydrocephalus, intracerebral calcifications and retinochoroiditis***



- ***Chronic ophthalmologic disease***



SEROLOGIC STATUS OF PREGNANT WOMEN

- **IgG+, IgM-** → *The woman is immune, if sample is taken during 1° trimester*
- **IgG-, IgM-** → *The woman is at risk: hygienic measures and serologic follow-up*
- **IgG+, IgM+** → *Acute infection?
Long lasting IgM production?
Avidity test*
- **IgG-, IgM+** → *Seroconversion?
False positive IgM ?*

THE ROLE OF THERAPY

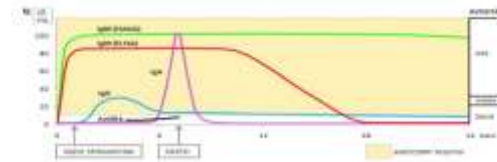
Therapy IS GIVEN IMMEDIATELY

It is effective if given within 4 weeks :

IgM+

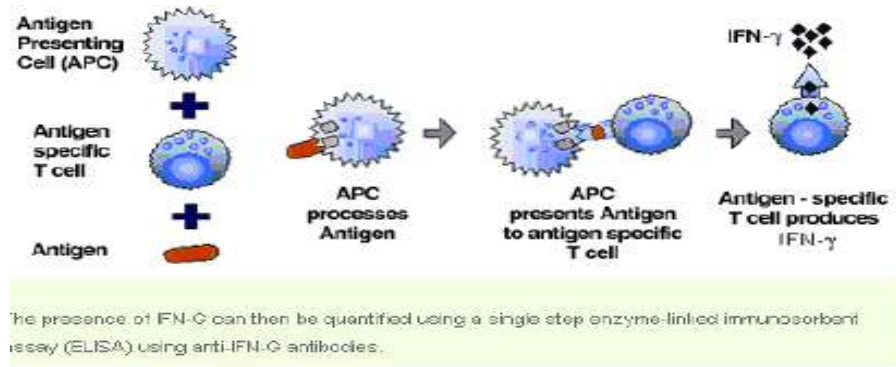


- *in preventing congenital infection (Thiebault et al Lancet 2007; Prusa et al CID 2015)*
- *in reducing sequelae (Cortina-borja et al. Plos med 2012; Wallon et al . CID 2013)*
- *It alters antibody maturation profile (Meroni et al. CVI 2009)*



AIM OF THIS STUDY

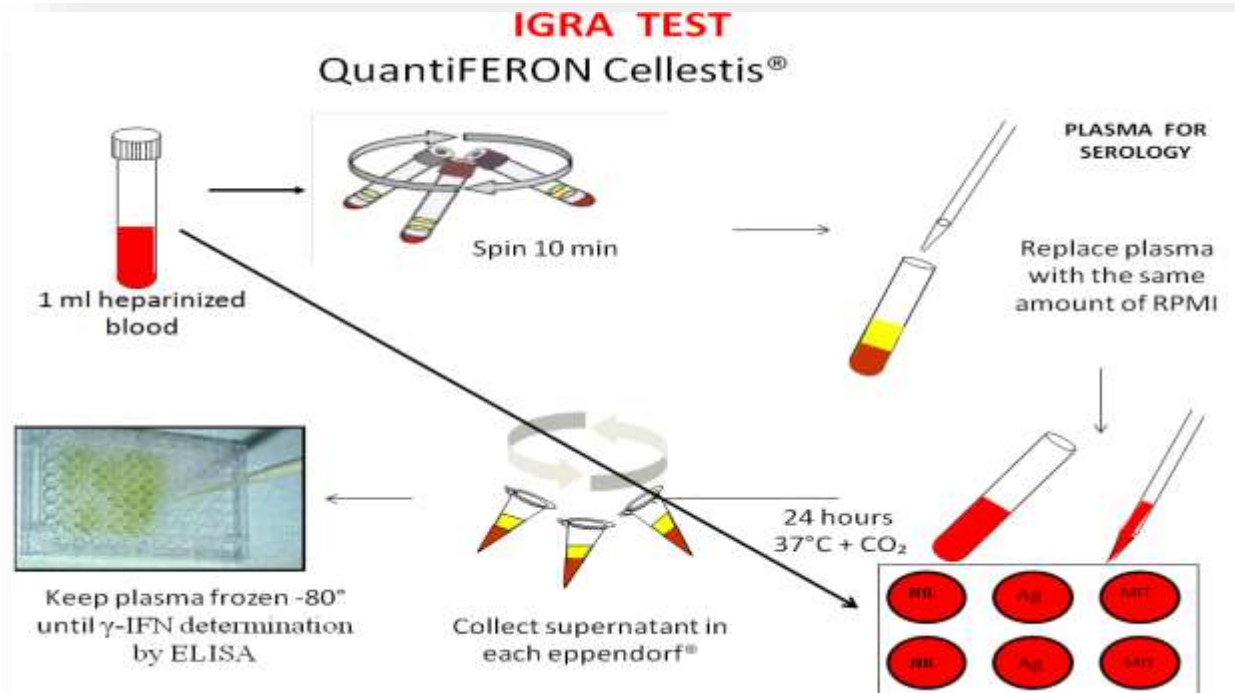
- *To set up a miniaturized IFN- γ release assay specifically designed for pregnant women*



- *adapting the test developed for newborns a few years ago in our laborator*
- *definition of a new cut-off*

METHODS - TEST RUN

1. *Heparinized blood*
2. *Add Antigen and Mitogen*
3. *Incubate for 24h*
4. *Collect supernatant and store it AT -80°C*



V.Meroni, F.Peyron. Personal communication. Pavia 2016

VALIDITY OF THE TEST

NIL



NEGATIVE CONTROL: IFN- γ production
should be negligible

AG



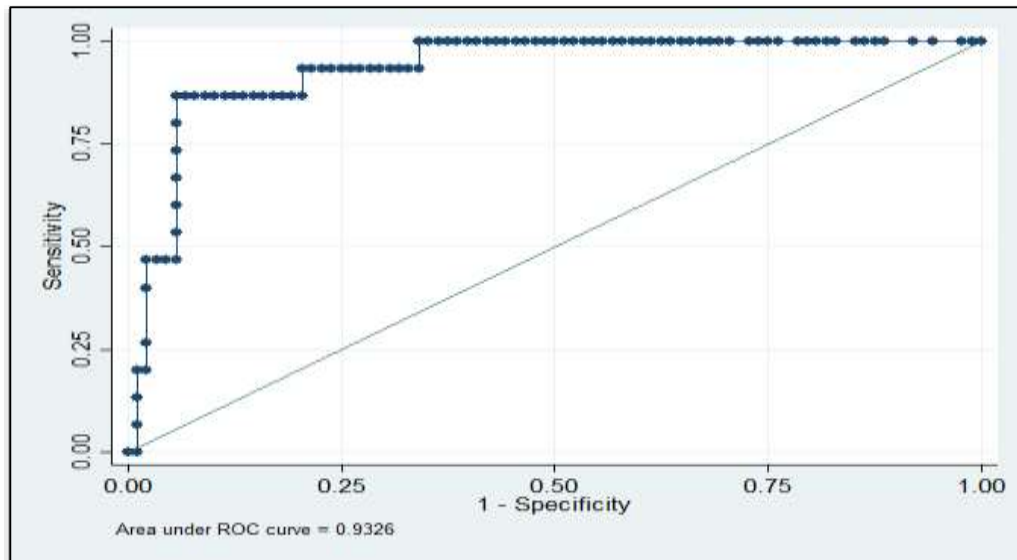
TOXOPLASMA GONDII ANTIGEN:
our test result

MIT



POSITIVE CONTROL: IFN- γ
production should be elevated

STATISTICAL ANALYSIS ON 104 PREGNANT WOMEN :14 PAST INFECTION 90 DOUBTFUL SEROLOGY (56 SEROCONVERSION AND 48 NO SEROCONVERSION)



Cut-Off value 0,74

Sensitivity 81%

specificity 92%.

RESULTS - NEWBORNS

Newborn infected	Total
Yes	4
No	89
Not known	11
Total	104



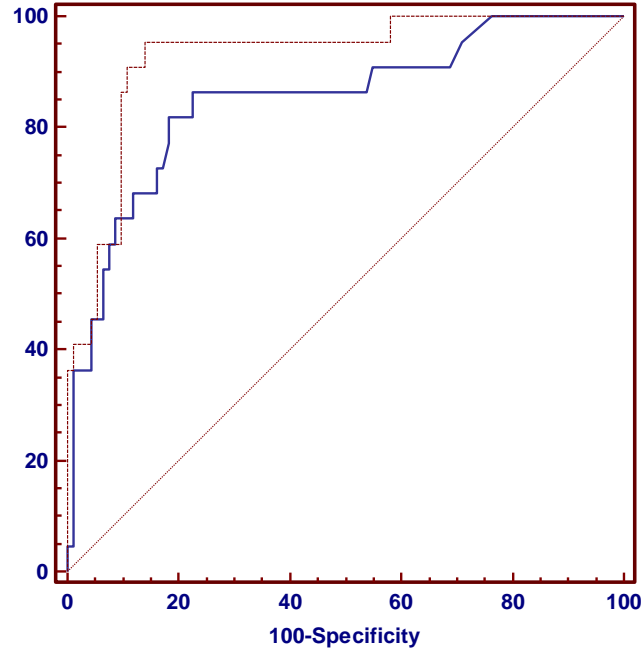
3 completely asymptomatic



1 with perimacular retinochoroiditis

IGRA TEST WAS POSITIVE IN ALL OF INFECTED NEWBORNS AND IN THEIR MOTHERS

STATISTICAL ANALYSIS ON 622 SAMPLES FROM 251 NON INFECTED AND 32 INFECTED NEWBORN



Cut-Off value 0,156

Sensitivity 93% specificity 89.7%.

CONCLUSIONS

- *SEROLOGY alone is not enough for a precise diagnosis of Toxoplasmosis in mothers with doubtful serology and in newborns without IgM*
- *IGRA TEST for Toxoplasma gondii proves to be sensitive and specific*
- *IGRA TEST allows to treat only infected patients, avoiding the anxiety in non- infected mother and side effects of therapy when not needed*
- *The CUT-OFF calculated with our study is markedly higher than that determined for newborns in 2009 (0,740 compared to 0,150)*