

Antenatal TORCH serology: time to start choosing wisely?



Northern Health

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Background

- Perinatal TORCH infections (toxoplasmosis, rubella, cytomegalovirus (CMV), herpes simplex (HSV), other) may cause congenital abnormalities and intrauterine growth restriction (IUGR).
- Management of positive or indeterminate serology can be complex, requiring further investigations and specialist consultation.
- TORCH serology is commonly performed for routine investigation of IUGR. Recent studies suggest this is often unnecessary in low risk populations^{1,2,3,4} and that targeted serology should be considered on a case by case basis.^{2,5}
- We aimed to evaluate the clinical utility and laboratory costs of antenatal TORCH serological screening in an Australian metropolitan non-tertiary hospital with > 3000 births p.a.**

Results

- 293 TORCH tests were ordered over the 4 year period, most commonly for IUGR (Table 1).
- More than half (n=156; 53.2%) were performed after 32 weeks gestation.
- Discussion re: clinical symptoms/exposure prior to testing documented in only 9 cases (3%).
- Maternal fetal medicine were involved in decision to test in 9 cases (3%).
- Rubella:** 247 women (84%) had prior antenatal documentation of rubella immunity. No positive rubella IgM results were identified.
- HSV serology IgG** was positive in 167 (57%) women, but these results had no observable impact on management.
- Positive/borderline IgM results for **CMV** (n=16) and/or **toxoplasmosis** (n=4) infection were reported in **19 (6.5%)** of total TORCH panels.

CMV and toxoplasmosis “screen positives” (Figure 1)

- IgG avidity** was performed in 12 of 19 cases; all had *high* avidity (ie infection > 3 months prior to testing).
- 12 women underwent additional assessment, including repeat serology, viral PCR, specialist ultrasound, and/or subspecialist referral.
- There were two cases of “possible” maternal primary CMV, and one of “possible” maternal toxoplasmosis.
- No woman underwent amniocentesis for diagnosis of fetal infection.
- 6 of 19 infants had neonatal TORCH serology; all were considered negative for congenital infection.
- \$53,912 in lab costs was expended to identify 0 cases of congenital infection (0%, 95%CI 0.0-1.2%).**

Conclusions

- Antenatal TORCH serology was of zero diagnostic yield for congenital infection during the study period and cost > \$53,000 in direct lab costs.**
- Inconsistency in the interpretation and management of TORCH results highlighted the absence of a well-defined clinical pathway.
- Selective testing for specific infections based on clinical and ultrasound features should replace reflex TORCH serology at our institution.

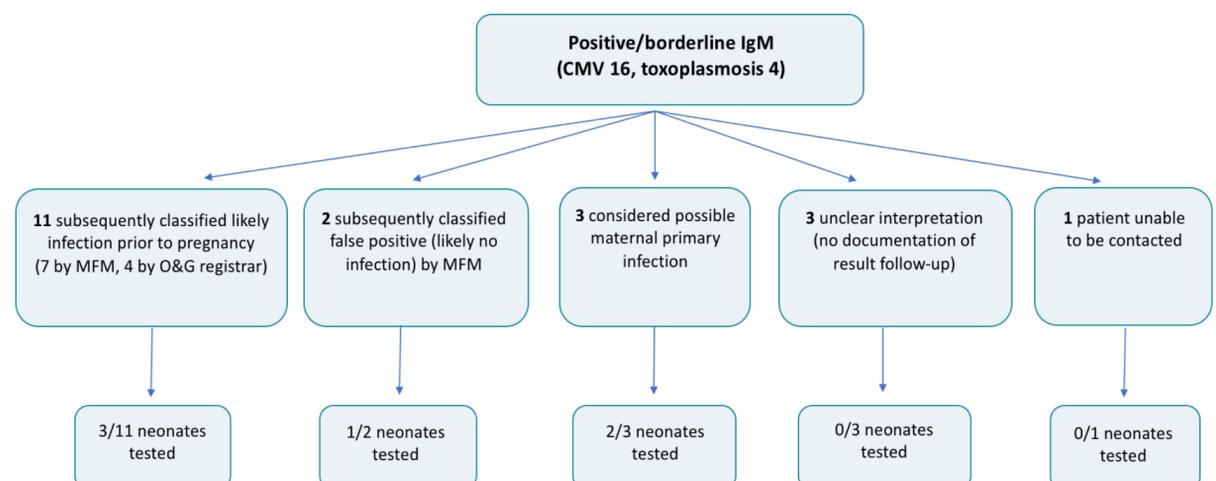
Methods

- Retrospective study evaluating antenatal TORCH serology at Northern Health, Melbourne, Australia over a four-year period.
- Laboratory TORCH results and associated clinical records from Jan 2014 – Dec 2017 were analysed.
- TORCH serology performed for stillbirths were excluded.
- A routine “TORCH” serology panel included **toxoplasma IgG + IgM, rubella IgG + IgM, CMV IgG + IgM, HSV1 IgG and HSV2 IgG**. Syphilis and parvovirus were included at clinician request only.
- The laboratory cost for one TORCH panel was \$184.
- Positive/borderline IgM results for CMV, toxoplasma and rubella, and positive HSV IgG results were considered TORCH “screen positive”.**
- Perinatal management and outcomes of screen positive cases were manually retrieved from medical records.
- After clinical assessment, screen positive cases were classified as: “likely”, “possible” or “unlikely” maternal primary infections.

Table 1. Indications for TORCH testing

Indication	Number of cases (%)
IUGR	241 (82.3%)
Abnormal ultrasound	43 (14.7%)
Polyhydramnios	11
Echogenic bowel	9
Oligohydramnios	7
Fetal hydrops	4
Ventriculomegaly	2
Other	10
Clinical suspicion of exposure/illness	6 (2.0%)
Unclear	3 (1.0%)

Figure 1. Clinical interpretation of serology and neonatal follow up*



*All six neonates tested were negative for congenital infection

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