Estimating the burden of disease of congenital toxoplasmosis in Denmark

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Congenital Toxoplasmosis
Congenital toxoplasmosis (CT) is a parasitic disease caused by infection with Toxoplasma gondii, which is transmitted from mother to fetus.

CT can cause severe fetal and neonatal health problems or even child’s death.

The most significant symptoms of CT are included in this study:
• fetal loss;
• chorioretinitis;
• intracranial calcifications;
• hydrocephalus;
• abnormalities of the central nervous system;
• neonatal death.

Burden of Disease
Morbidity - Years Lived with Disability (YLDs):

\[ \text{YLD} = \text{Number of cases} \times \text{duration till remission or death} \times \text{disability weight} \]

Mortality - Years of Life Lost (YLLs) due to premature mortality:

\[ \text{YLL} = \text{Number of deaths} \times \text{life expectancy at the age of death} \]

Burden of Disease - Disability-Adjusted Life Years (DALYs) are used as a public health measure:

\[ \text{DALYs} = \text{YLDs} + \text{YLLs} \]

Morbidity & Mortality
Data from comprehensive public health surveillance and official statistics were used to estimate cases and deaths in Denmark in 2017.

Morbidity – chorioretinitis, intracranial calcifications, hydrocephalus, CNS abnormalities

Mortality – fetal loss, neonatal death

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Estimated cases per 1000 live births in 2017</th>
<th>Total cases in 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetal loss</td>
<td>-</td>
<td>0.89 (0.64-1.22)</td>
</tr>
<tr>
<td>Chorioretinitis</td>
<td>0.037 (0.017-0.067)</td>
<td>2.29 (1.05-4.09)</td>
</tr>
<tr>
<td>Intracranial calcifications</td>
<td>0.052 (0.028-0.084)</td>
<td>1.18 (1.69-5.19)</td>
</tr>
<tr>
<td>Hydrocephalus</td>
<td>0.008 (0.001-0.026)</td>
<td>0.50 (0.07-1.62)</td>
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<tr>
<td>CNS abnormalities</td>
<td>0.008 (0.001-0.026)</td>
<td>0.50 (0.07-1.62)</td>
</tr>
<tr>
<td>Neonatal death</td>
<td>0.003 (0.0001-0.018)</td>
<td>0.21 (0.008-1.08)</td>
</tr>
<tr>
<td>Chorioretinitis later in life</td>
<td>0.051 (0.023-0.089)</td>
<td>3.10 (1.39-5.49)</td>
</tr>
</tbody>
</table>

Total Burden of Disease of Congenital Toxoplasmosis

Ranking of DALY estimates in Denmark in 2017:
1. campylobacteriosis;
2. norovirus infection;
3. salmonellosis;
4. listeriosis;
5. congenital toxoplasmosis;
6. Shiga-toxin producing E. coli (STEC) infection;
7. yersiniosis.

Foodborne Disease Ranking

References