Epidemiological outlook of the Neural Tube Defects in Mexico 1999-2016

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Epidemiological Surveillance System of Neural Tube and Craneofacial Defects
• Introduction

Neural tube defects (NTD) are a group of diseases that seriously affect children’s health causing temporal or chronic disability.

They have a genetic or environmental origin but they are an important issue on the health system, society and themselves.

• Objectives

To describe the epidemiological outlook of the NTDs in Mexico since 1999 to 2016.

To know the magnitude of the NTD as a public health problem in our country and determine health policies based on evidence.

Sistema de Vigilancia Epidemiológica de Defectos de Tubo Neural y Craneofaciales (SVEDTN/DCF)
Sistema Único Automatizado para la Vigilancia Epidemiológica en Línea (SUAVE)
Frequency distribution of NTD, Mexico 2016

Sistema de Vigilancia Epidemiológica de Defectos de Tubo Neural y Craneofaciales (SVEDTN/DCF)

National average 3.45%
MTHFR & polymorphism in Mexico

- **C677T** (48%) frequency
  - 39% frequency carrier
  - 17% homozygote frequency
  - 31% heterozygote frequency

- **A1298C** 14% frequency
  - Caucasian, Americans, Canadian (29%)
  - Afro origin (1%)

Compound heterozygote frequency from a Mexican descendant with an affected progenitor 23%

Compound heterozygote frequency from Caucasian descendant 38%

- MTR A2756G
- MTHFD1 G1958A
- SLC19A1 A80G
- MTRR A66G
- TCN2 C776G
- FOLH1 T484C
Parental background

**PARENTAL AGE**

- **Fathers**
- **Mothers**

**PARENTAL FOLIC ACID INTAKE**

- **Mom**
- **Dad**
Consanguinity frequency

1st degree cousins: 0.63%

Uncle – niece: 0.25%

2nd degree cousins: 0.63%

Father – daughter: 0.12%

3rd degree cousins: 0.25%

Total: 1.88%
NTD Birth weight

- 3.93% HBP & Preeclampsia
- 20.8% more than 1 defect
- 11.5% hydrocephaly
- 6.09% CL/CP
- 0.88% micro/anophtalmia
- 0.88% holoprosencephaly

Bar chart showing:
- Extreme low birth weight ≤ 1000 gr. (18.65%)
- Very low birth weight 1001 to 1500 gr. (8.12%)
- Low birth weight 1501 to 2500 gr. (21.70%)
- Normal BW 2501 to 3999 gr. (48.86%)
- Macrosomic ≥ 4000 gr. (1.52%)
- NA (1.14%)

Weight categories:
- ≤2lbs,20ozs
- 2lbs,206ozs to 3lbs,30ozs
- 3lbs,309ozs to 5lbs,51ozs
- 5lbs,513ozs to 8lbs,81ozs
- ≥8lbs,818ozs
Anencephaly, México 2016.

- <24 h: 84%
- 1 day: 8%
- 2 days: 4%
- 3 days: 2.7%
- 4 days: 0.38%
- 5 days: 0.77%
- 7 days: 0.38%

Encephalocele, México 2016.

- <24: 83.8%
- 1 day: 3.22%
- 4 days: 3.22%
- 5 days: 3.22%
- 6 days: 3.22%
- 7 days: 3.22%
NTD mortality

Myelomeningocele, Mexico 2016.

- <24: 5%
- 2 días: 11%
- 5 días: 11%
- 7 días: 5%
- 9 días: 5%
- 105 días: 63%

Rest of Spina Bifida, Mexico 2016.

- <24: 6%
- 1 día: 13%
- 4 días: 81%