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| **Supplemental Table 1. Visual and hearing outcomes of children with Congenital Zika Syndrome (CZS) with or without microcephaly** | | | | | | |
| **Visual outcomes** | | | | | | |
| **Study design/sample size (n)/reference** | **Age range (months)** | **Type of diagnosis** | **Geographical area** | **Main neurologic outcomes (%)** | **Main structural ocular abnormalities (%)** | **Main visual function outcomes (%)** |
| Cross-sectional, case series: Suspected CZS (10 infants; 20 eyes) / Ventura et al., 2016 | 0.7–2.9 | Clinical findings of CZS | Pernambuco state/ northeast of Brazil | Microcephaly (100) | Structuralb in 17/20 eyes (85); retinalc in 15/20 eyes (75); ONd in 4/20 eyes (45) | Strabismus in 6/10 infants (60); nystagmus in 1/10 infants (10) |
| Case-series: Suspected CZS (29 infants; 17 eyes) / de Paula Freitas et al., 2016 | 1–6 | Clinical findings of CZS | Bahia state/ northeast of Brazil | Microcephaly (100) | Structuralb in 17/58 eyes (29); retinal in 11/17 eyes (65); ON in 8/17 eyes (47); bilateral iris coloboma in 2/17 eyes (12); lens subluxation in 1/17 eyes (6) |  |
| Cross-sectional: Confirmed CZS (32 infants; 64 eyes) / Ventura et al., 2017a | 4–7 | Laboratory testing, infant (MAC-ELISA on CSF) | Pernambuco state/ northeast of Brazil | Microcephaly (100); Seizure (69); brain calcifications (97); cerebellar/brainstem hypoplasia (38); hypoplastic corpus callosum (88). | Retinal findings in 18/64 eyes (28); ON in 11/64 eyes(17); retinal vessels attenuation in 2/64 eyes (3); straightening retinal vessels in 2/64 eyes (3) | Abnormal binocular visual acuity in 22/30 infants (73); abnormal visual development in 31/32 infants (97); strabismus in 24/32 infants (75); nystagmus in 9/32 infants (28); reduced contrast sensitivity in 20/31 infants (65); hypo-accomodation in 5/14 infants (36) |
| Prospective, case-series: Suspected CZS (43 infants) / Yepez et al., 2017 | 0.2–6.6 | Clinical findings of CZS | Colombia and Venezuela | Microcephaly (100) | Ocular findings in 43 infants (100); Anterior segment (12); structuralb (88);  ONd in 5 infants (12); pigment mottling in 27 infants (63); lacunar maculopathy in 3 infants (7); chorioretinal scarring in 3 infants (7); combination of lesions in the posterior pole in 11 infants (26); congenital glaucoma in 5 infants (12). |  |
| Cross-sectional: Suspected CZS (70) / Verçosa et al., 2017 | 1–8 | Clinical findings of CZS | Ceará state/ northeast of Brazil | Microcephaly (100) | Ocular findings in 25 infants (36); structuralb in 18 infants (26); retinal in 15 infants (21) in 27 eyes (19); ON in 10 infants (14) in 17 eyes (12%) | Strabismus or nystagmus in 7 infants (10) |
| Case-series, a cohort: ZIKV exposed in-utero (112) / Zin et al., 2017 | 0–10.2 | Laboratory testing; mother (RT-PCR) | Rio de Janeiro state/ southeast of Brazil | Microcephaly in 20 infants (18); other CNS abnormalitiesa in 31 infants (28); no CNS findings in 61 infants (55) | Structuralb in 24 infants (21); retinalc in 15 infants (13); ONd in 19 infants (79); microphthalmia in 1/112 infants (4) | Nystagmus in 6/24 infants (25) |
| Cross-sectional, case control: Confirmed CZS (119) / Ventura et al., 2018 | 6–13 | Laboratory testing, infant (MAC-ELISA on CSF) | Pernambuco state/ northeast of Brazil | Microcephaly in 100/113 infants (89); severe microcephaly in 73/100 infants (73) | Retinalc in 74/234 eyes (32); ONd in 63/117 eyes (26.9) | Abnormal binocular visual acuity in 107 infants (90); abnormal visual development milestones in 100/108 infants (93); strabismus in 95/119 infants (80); nystagmus in 54/119 infants (45); reduced contrast sensitivity in 87/107 infants (81); visual field defect in 41/91 infants (45) |
| Cross-sectional: Confirmed CZS (60) / Ventura et al., 2017b | 9.0–16.0 | Laboratory testing, infant (MAC-ELISA on CSF) | Pernambuco state/ northeast of Brazil | Microcephaly in 51/60 children (85); mild microcephaly in 14/51 children (28); severe microcephaly in 37/51 children (73) | Structuralb in 48/115 eyes (42) of 30/58 children (52); Retinalc in 35/115 eyes (30); ONd in 26/115 eyes (23); vessels attenuation in 2/115 eyes (2); cataract, microcornea, microphthalmia in 1 children (2); significant refractive error in 52/119 eyes (44%) in 29/60 children (48) | Abnormal binocular visual acuity in 60 children (100); hypo-accommodation in 17/21 children (81); strabismus in 55/60 children (92); nystagmus in 28/60 children (47) |
| Prospective cohort, Cross-sectional: Suspected or Confirmed CZS (224) / Tsui et al., 2018 | 0.4–3.3 | Laboratory testing, mother (RT-PCR); Clinical suspicion; mother; fetal ultrasound findings; Laboratory testing, infant (RT-PCR); Clinical findings of CZS | Rio de Janeiro state/ southeast of Brazil | Microcephaly in 62/224 infants (28); other CNS abnormalities and microcephaly in 90/224 infants (40) | Eye abnormalities in 57/224 infants (25); retinalc in 37/224 infants (17); ONd in 44/224 infants (20); unilateral microcornea, inferior iris coloboma, and optic nerve coloboma in 1/224 infant (0.4); unilateral microcornea and microphthalmia in 1/224 infant (0.4); ON atrophy, retinal vessel attenuation, and macular chorioretinal scar in 1/224 infant (0.4) |  |
| Retrospective study: Confirmed CZS (70) / Campos et al., 2020 | 0–15.5 | Laboratory testing, infant (MAC-ELISA on CSF) | Pernambuco state/ northeast of Brazil | Neuroimaging: occipital volume loss (95), ON atrophy (12), chiasmal atrophy (4), globe abnormality (1.4) | Structural ocular abnormality in 34/62 infants (55): fundus findings in 34 infants (55), optic nerve findings in 24 infants (39). No anterior segment findings. | Visual impairment identified in 25/25 infants (100): mild in 2 infants (7), moderate in 5 infants (19), severe in 7 infants (27), profound in 3 infants (12), near blindness in 7 infants (27), blindess in 1 infant (4). |
| Retrospective: CZS (469) / Ventura et al., 2021 | 0–36 | Clinical manifestations of CZS  and positive reverse transcription polymerase-chain-reaction (RT-PCR) and/or serology  for the Zika virus | Rio de Janeiro state / southeast of Brazil;  Pernambuco and Bahia states / northeast of Brazil | Microcephaly in 214 children; 62 cases were severe | Ocular manifestations were found in 269 of 938 eyes (28.7%; 148/469 children [31.6%]). The main ocular alterations were optic nerve pallor in 122 of 938 eyes (13.0%), focal pigment mottling in 112 eyes (11.9%), and chorioretinal scars in 101 eyes (10.8%) |  |
| **Hearing outcomes** | | | | | | |
| **Study design/sample size (n)/reference** | **Age range (months)** | **Type of diagnosis** | **Geographical Area** | **Main Neurologic outcomes (%)** | **Audiological evaluation (methodology)** | **Main audiological outcomes (%)** |
| Prospective observacional study (78) / Faria et al., 2020 | 0.75–3.25 | Group 1: Laboratory testing, mother (RT-PCR) and Clinical findings of CZS  Group 2: (control) asymptomatic children; negative mothers  Group3: Clinical findings of CZS; mothers with exanthema without laboratory confirmation  Group 4: Clinical findings of CZS; mothes without exanthema without laboratory confirmation | Rio de Janeiro State/ southeast of Brazil | CZS abnormalities:  Group1: 9/36  Group2: 0/24  Group3: 12/12  Group4: 6/6 | NHS: aABR : (test/retest)  Diagnosis: ABR specific frequency with 500 and 2000 Hz tone burst CE-Chirp stimuli in air and bone pathway. | NHS: test: 6/78 (7.7); retest: 4/78 (5,1) “FAIL”  Diagnosis: 3 children (group 3 and4) with sensorineural hearing loss (3.8) |
| Cross-sectional: CZS (70) / Leal et al., 2016 | 0–10 | Laboratory testing, infant (MAC-ELISA on CSF) | Pernambuco State/ northeast of Brazil | Microcephaly in all children; severe microcephaly in 43/70 children | NHS: a ABR : ( test/ retest)  Diagnosis: ABR specific frequency with 500 and 2000 Hz tone burst stimuli in air and bone pathway. | NHS: test: 16/70 (22); retest: 8/70 (11.4) “FAIL”  Diagnosis: 4 sensorineural hearing loss (5.8) |
| Cross- sectional: ZIKV exposed *in-utero* (43) / Fandiño-Cárdenas et al., 2019 | 3–24 | Epidemiological and clinical criteria based on maternal symptoms (ZIKV-exposed infants group) | Cesar, Colombia | ZIKV-exposed infants: 3 with microcephaly | NHS: 1 test DPOAEs; retest: tympanogram and aABRs at 35 dBnHL  Follow up (24 month): DPOAEs. | NHS: test: Zika-exposed: 10/43 (23.2); Control: 4/23 (17.4); Retest: 0/10 (0) “FAIL”  Follow up 24m: Zika-exposed: 31/43; Control: 12/23  No sensorioneural hearing loss |
| **Abreviations:** Visual: MAC-ELISA (antibody-capture enzyme-linked immunosorbent assay); CSF (cerebrospinal fluid); RT-PCR (reverse transcription - polymerase chain reaction); CNS (central nervous system); CZS (congenital Zika syndrome); ON (optic nerve). Auditory: NHS (newborn hearing screening); aABR (auditory brainstem reponse); DPOAEs (distortion product otoacoustic emissions)  aOther CNS abnormalities includes ventriculomegaly, cerebral calcifications, posterior fossa abnormalities, pachygyria, and lissencephaly.  b Structural abnormalities includes retinal and optic nerve findings.  cRetinal includes pigment mottling and chorioretinal atrophy,  d Optic Nerve includes hypoplasia, pallor, increased optic cup. | | | | | | |

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