

Khaled A. Tawansy, M.D.

August 7, 2014

Matter of Naomi Burns

Dear Counsel,

Upon your request I have reviewed the medical records, Ret-Cam eye images, ophthalmology notes, brain imaging, and delivery records pertaining to Naomi Burns DOB 01/01/04. I have reviewed in detail Naomi's hospitalization at the University of Michigan Medical Center. I have been specifically asked to evaluate the possibility of child abuse and determine the significance of the retinal hemorrhages.

I enclose below a summary of the facts and my findings. I reserve my rights to revise my findings should additional information become available.

By way of background, I am a board certified ophthalmologist with fellowship training in pediatric retinal disorders and surgery. Since 1997, I have been director of a clinical program specializing in the management of complex retinal problems in children, including retinopathy of prematurity, hereditary retinal vascular diseases, shaken baby syndrome, trauma, retinal detachment, and retinal hemorrhages of various causes. I see hundreds of such patients every week, perform necessary imaging studies, exams under anesthesia, and surgeries. I have done research on the patterns of retinal hemorrhages in infants from different etiologies, and I am regularly asked by courts throughout the country to determine the medical probability of child abuse. When I review these cases, I always look at the entire medical history of the child, including follow up information after discharge from the hospital which is not available to the intensive care specialists in the acute setting. My CV is attached to this letter as Exhibit A.

The following is a summary of my medical assessment of this case:

1. Naomi was born at term via cesarean section after a second stage arrest. There was preceding 3.5 hours of labor and attempt at extraction by applying vacuum to the scalp over four contractions without success. The trauma to the head associated with vacuum extraction causes subdural hematoma in a significant percentage of cases.
2. Within her first weeks of life Naomi had episodes of emesis that were diagnosed as gastroenteritis but these may also be attributable to intra-cranial hemorrhage that was at that time undiagnosed.
3. Patients with subdural or subarachnoid hemorrhage early in life are prone to developing organized fibrovascular membranes as the blood clears. There was evidence of such membranes on Naomi's MRI studies at the University of Michigan. These membranes are fragile and have a propensity to cause repeated hemorrhage with minor or incidental head trauma. The events preceding Naomi's decline in mentation

- with respiratory failure and possible seizures are compatible with minor head trauma that could lead acute bleeding and a rise of intra-cranial pressure.
4. The brain imaging studies do not reveal cerebral cortical injury or axonal edema and disruption of the type that occurs with abuse head trauma or angular acceleration/deceleration. The imaging studies only show bilateral subdural hematomas less than 1 cm in maximal thickness with mass effect.
 5. The retinal hemorrhages that were seen by the ophthalmologist at University of Michigan and documented by Ret-Cam imaging were predominantly superficial (sub internal limiting membrane or nerve fiber layer or intra-retinal.) Although these types of hemorrhages can occur with abusive head trauma or shaking injury, they are not specific to that mechanism. In fact they occur regularly with abrupt elevations of intra-cranial pressure (as in acute subdural hematoma) when the pressure in the cerebrospinal fluid surrounding the optic nerve exceeds the pressure of venous return in the retina as it drains into the optic nerve.
 6. Ocular findings that are more specific to shaking injury include vitreous base avulsion or dis-insertion, optic nerve edema and atrophy, retinal hemorrhages extending deep into the sub-retinal and sub-retinal pigment epithelial spaces, retinal pigment epithelial disruption and clumping, retinal splitting (retinoschisis), and retinal vascular narrowing with peripheral non-perfusion. These findings are permanent changes that can be seen well after the blood clears and are associated with long-term visual morbidity. None of these features were seen in Naomi.
 7. Fluorescein angiography was performed on Naomi, an imaging study of the retina that allows more detailed assessment of the location of bleeding and blood flow. It did not show non-perfusion of the periphery or deep retinal hemorrhages and retinal pigment epithelial alteration, features that if present would have supported the diagnosis of shaking injury or non-accidental trauma.
 8. Follow up examinations of Naomi after discharge from the hospital reveal essentially normal neurologic and visual function with healthy appearing retinas and optic nerve. In specific there is no optic atrophy, pigment alteration, or vitreous degeneration. A significant shaking injury would be expected to leave a long-term footprint in the retinal appearance and some limitation in function which was not present.
 9. A review of the medical and social records reveals that the parents behaved responsibly in caring for Naomi and seeking appropriate medical care for her.

To summarize, although upon first review this case may appear as child abuse because of the combination of retinal and subdural hemorrhage in association with declining mental status and respiratory failure, the medical facts of this case lead to a more medically plausible explanation. The circumstances of Naomi's birth and subsequent admission with subdural hemorrhage can be attributed to her vacuum delivery, and there is nothing specific about the retinal findings to suggest the angular acceleration-deceleration injury of shaking.

I may be reached to discuss this matter at any time on my cell phone [REDACTED]

Respectfully submitted,

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