

In the United States Court of Federal Claims

No. 05-123V
(Filed under seal August 14, 2008)
(Reissued September 3, 2008)¹

**JODY L. NORDWALL, as trustee
for the next of kin of
MATEO TORI, deceased,**

Petitioner,

v.

**SECRETARY OF HEALTH AND
HUMAN SERVICES,**

Respondent.

*
* Vaccine Act; motion for review of
* decision, Vaccine Rule 23; table injury;
* causation-in-fact; encephalopathy;
* vasogenic edema; autopsy as
* contemporaneous medical record;
* DTaP; expert witness credibility.

John F. McHugh, New York City, New York, for petitioner.

*Michael P. Milmoë, Torts Branch, Civil Division, Department of Justice, with whom
were Jeffrey S. Bucholtz, Acting Assistant Attorney General, Timothy P. Garren, Director,
Vincent J. Matanoski, Acting Deputy Director, and Catharine E. Reeves, Assistant Director, all
of Washington, D.C., for defendant.*

MEMORANDUM OPINION AND ORDER

WOLSKI, Judge.

Petitioner Jody L. Nordwall has moved for review of Special Master Christian J. Moran’s decision denying her, as next of kin to Mateo “Mat” Tori, compensation under the National Vaccine Injury Compensation Program, 42 U.S.C. §§ 300aa-10 *et seq.* (the “Vaccine Act”), and directing that judgment be entered for respondent, the Secretary of the Department of Health and

¹ Pursuant to Rule 18(b) of the Vaccine Rules of the United States Court of Federal Claims, the parties were given fourteen calendar days in which to object to the public disclosure of information contained in this opinion prior to its public release. No objection has been filed. Accordingly, the opinion is reissued for publication with some minor, non-substantive corrections.

Human Services. Petitioner alleges that a diphtheria-tetanus-pertussis (DTaP) vaccine received by her son, Mat, on the afternoon of January 17, 2003, caused his death the following morning. She raises several objections to the Special Master's decision. These objections concern the finding by the Special Master that respondent's expert was more credible than her expert. For the reasons below, the Court sustains the Special Master's decision.

I. BACKGROUND

A. Facts

Mat Tori, the son of Dr. José Tori and Jody Nordwall, was born on November 7, 2002. *See* Pet.'s Ex. 1 (Mat's birth certificate); *see also* Pet.'s Ex. 14 at 1 (identifying José Tori as a physician). Other than an acid reflux problem for which Mat was prescribed Zantac, he was a healthy baby. Pet.'s Ex. 4a at 9 and 15; Pet.'s Ex. 4b. On January 17, 2003, at 2 p.m., Mat had his two-month well child examination. Pet.'s Ex. 4a at 5. At this examination, he received his vaccinations, including his first dose of the DTaP vaccine. *Id.* at 7. He was pronounced dead the following morning, January 18, 2003. Pet.'s Ex. 9 at 3; Pet.'s Ex. 10.

The facts in the previous paragraph are not in dispute. The parties disputed before the Special Master, however, what happened between the time Mat received his DTaP vaccination and his death. *See Nordwall v. Sec'y of Health & Human Servs.*, No. 05-123, 2008 WL 857661, at *2 (Sp. Mstr. Feb. 19, 2008). It appears that on the evening Mat received his vaccination, his mother left for work at 6:30 p.m., leaving the baby in the care of Dr. Tori. *See* Transcript ("Tr.") at 19, 41, 67-69. When Dr. Tori put Mat to sleep, the baby was swaddled in a blanket and propped between three pillows to help control his acid reflux problem. Tr. at 16, 22, 31, 56; Pet.'s Ex. 21-2 (demonstrating how Mat was wrapped and positioned on the pillows). Doctor Tori testified that he checked on Mat at approximately 4:00 a.m., after he was awakened by Mat's two-year old sister -- who told him that Mat was crying. Pet.'s Ex. 9 at 1; Tr. at 25.

Around 8:30 a.m. on January 18, 2003, Ms. Nordwall returned home from her job. Pet.'s Ex. 6 at 2; Pet.'s Ex. 13 at 2. She discovered that Mat was blue and not breathing. Pet.'s Ex. 6 at 2; Pet.'s Ex. 13 at 2. After discovering Mat, both Ms. Nordwall and Dr. Tori performed cardiopulmonary resuscitation (CPR) and called for emergency help. Pet.'s Ex. 6 at 2; Pet.'s Ex. 8. Paramedics brought Mat to a local hospital. Pet.'s Ex. 8. Doctors attempted to resuscitate Mat, but were unable to do so. Pet.'s Ex. 9 at 3. In their examination of Mat, emergency room doctors noted that his temperature was 99 degrees Fahrenheit and that his anterior fontanelle was "very sunken." *Id.* at 2. Mat was pronounced dead at 10:07 a.m. on January 18, 2003. *Id.* at 3. An autopsy was performed to determine how Mat died. Pet.'s Ex. 11. The Medical Examiner found that Mat died from positional asphyxia. *Id.* at 1.

On January 18, 2005,² Ms. Nordwall and Dr. Tori³ filed a petition for compensation claiming that the DTaP vaccination Mat received on January 17, 2008 caused his death the following day. Pet. at 1. To support her case, petitioner filed an expert report by Dr. John Shane, who concluded that the DTaP vaccine caused Mat's death. Pet.'s Ex. 16 (opinion letter of Dr. John J. Shane). In response, pursuant to Rule 4 of the Vaccine Rules of the United States Court of Federal Claims ("VR"), the government filed a report maintaining that Ms. Nordwall did not establish that the DTaP vaccination caused Mat's death. Resp.'s Rule 4(c) Rep. at 4-7. To support this contention, the government filed a report by its expert witness, Dr. Lucy Rorke-Adams, who concluded that the evidence did not establish that Mat suffered an encephalopathy as defined by regulation, but instead showed that Mat died from positional asphyxia. *Id.* at Att. A; *see also* 42 C.F.R. § 100.3(b)(2) (2007) (defining "encephalopathy" under the Table).

B. The Hearings Before the Special Master

On May 9, 2007, the Special Master held a hearing in the case. Doctor Shane and Dr. Rorke-Adams testified as expert witnesses. *See* Tr. at 93, 154 (identifying the expert witnesses). Also testifying were Ms. Nordwall and Dr. Tori. *See id.* 12, 64 (testimony of Mat's parents). On October 23, 2007, the Special Master held a supplemental hearing, during which Drs. Shane and Rorke-Adams testified. *See id.* at 264 (describing the proceedings of the supplemental hearing). The Special Master issued his decision denying petitioner compensation under the Vaccine Act and entering judgment for the respondent on February 19, 2008. *See Nordwall*, 2008 WL 957661, at *1.

At the initial hearing Dr. Tori, Mat's father, first testified to Mat's abilities. Tr. at 15. He testified that while Mat was able to lift himself up for a short period of time and to move his head from side to side, the child was unable to roll from side to side. *Id.* Doctor Tori also explained that because Mat suffered from acid reflux, when sleeping he was placed between two pillows or in a "little seat" at a 45 degree angle so that the acid would stay in his stomach. *Id.* at 15-16. Doctor Tori then explained the events, as he remembered them, between the time Mat received his vaccinations and the time he was pronounced dead. *Id.* at 16-34. After Dr. Tori testified, Ms. Nordwall took the stand. *Id.* at 64. During her testimony, Ms. Nordwall testified that the morning after Mat's vaccination, she had found Mat lying on his left side and covered by a blanket, though the blanket did not cover his entire face. *See* Tr. at 76 (describing the position of the blanket over the baby's face using Pet.'s Ex. 26-3), 85. When she found Mat, Ms.

² The Clerk's Office initially docketed the petition as filed on January 19, 2005, one day outside of the statute of limitations period. The Special Master determined, in a June 2, 2005 order, that the Clerk's Office actually timely received the petition on January 18, 2005. *See Nordwall*, 2008 WL 857661, at *1 n.3.

³ On January 22, 2007, the Special Master granted a motion to change the case's caption to eliminate Dr. Tori as a petitioner. *See Nordwall*, 2008 WL 857661, at *1 n.2.

Nordwall testified that he was cyanotic, or blue, and not breathing, but still warm. *Id.* at 75-76, 79. She testified that when she began CPR, she “got a mouthful of spit back” when first ventilating him. *Id.* at 77.

After Mat’s parents testified, the Special Master then turned to the testimony of the expert witnesses. *See id.* at 92, 154 (identifying the two expert witnesses). Doctor Shane, the petitioner’s expert, testified to his credentials in neuropathology, including examining as a pathologist a “massive number” of child brain biopsies taken by a Dr. Spitz, who worked with children suffering from a certain brain disease.⁴ *Id.* at 95. Doctor Shane has served as the Chairman of the Department of Pathology and Medical Director of Laboratories at Lehigh Valley Hospital in Allentown, Pennsylvania. *Id.* at 94-95. At this hospital, he established the largest hospital-based forensic science section in the United States. *Id.* at 94. He also is an adjunct professor at Hahnemann University College of Medicine. *Id.* at 96. After being certified as an expert in neuropathology by the Special Master, Dr. Shane testified that he examined the autopsy protocol of Mat and made “significant findings” from the slides of Mat’s brain tissue, including “an extensive amount of vasogenic edema.” *Id.* at 100-01.

Doctor Rorke-Adams served as the expert witness for the respondent. Doctor Rorke-Adams is a neuropathologist with subspecialties in pediatric neuropathology and forensic neuropathology, and has practiced neuropathology since 1962. *Id.* at 155. She holds a faculty position at the University of Pennsylvania as a Professor of Pediatrics, Neurology, and Pathology. *Id.* at 157. She also has written hundreds of peer-reviewed articles and two books in the field, and has held numerous honorary and leadership positions with associations and journals in her field. *Id.* at 157-59. After being certified as an expert in neuropathology, Dr. Rorke-Adams opined that she saw no evidence of an encephalopathy in Mat’s brain. *Tr.* at 159-60. After examining Mat’s medical records, Dr. Rorke-Adams concluded that he smothered in his blanket. *Id.* at 165. She based this conclusion on the medical examiner’s report that Ms. Nordwall found Mat cyanotic, under a blanket, without a pulse or respiration. *Id.* at 164-65. Doctor Rorke-Adams opined that slides of Mat’s heart, lungs, and spleen showed congestion, which occurs when blood vessels fill with blood and dilate.⁵ *Id.* at 180. According to Dr. Rorke-Adams, though non-specific, congestion is an indication of a failing circulatory system. *Id.* at 180-82. The increase in pressure caused by the congestion, Dr. Rorke-Adams opined, can cause

⁴ The Special Master appears to have mistakenly believed that Dr. Shane trained under Dr. Spitz. In questioning respondent’s expert, Dr. Rorke-Adams, the Special Master noted that “[Dr. Shane] mentioned that he trained with . . . Dr. Spitz” and proceeded to ask Dr. Rorke-Adams of Dr. Spitz’s reputation. *Tr.* at 225. Doctor Rorke-Adams opined that Dr. Spitz was “held in very poor esteem by the medical community in Philadelphia.” *Id.* at 226.

⁵ At the prompting of the Special Master, Dr. Rorke-Adams explained that while larger blood vessels are normally filled with blood, many of the smaller blood vessels in the organs are usually empty. *Tr.* at 180. Because the doctor observed that many of these smaller vessels filled with blood, she diagnosed congestion. *Id.* at 180-81.

the veins and capillaries to break, allowing for a hemorrhage, which is common in an asphyxial death. Tr. at 182. She testified she found such hemorrhages in her review of Mat's autopsy slides. *Id.*

Doctor Shane, who contends that Mat died from vascular encephalopathy due to the DTaP vaccination, testified that two types of cerebral edema can occur in the brain. *Id.* at 101. The first type of edema --cytotoxic or cellular swelling within the brain -- is commonly seen with ischemia, which is a decreased blood supply to the brain. *Id.* The second type of edema -- vasogenic edema -- occurs in toxic brain injuries such as encephalopathies. *Id.* at 101. Vasogenic edema, according to Dr. Shane, occurs when the cells that line the blood vessels, endothelial cells, separate and allow for the escape of fluids, causing a swelling. *Id.* Doctor Shane testified that this fluid compresses venules (tiny blood vessels) and causes a change in pressure in the brain, altering brain function. Tr. at 101-02. An encephalopathy, according to Dr. Shane, causes the fluid to escape into spaces around the blood vessels and veins and to collect around brain cells. *Id.*

Doctor Shane originally testified that the baby died from vasogenic edema due to encephalopathy; however, during the second hearing, Dr. Shane also opined that cytotoxic edema was present in Mat's brain. *Compare id.* at 103 and 290 *with id.* at 270. Within Mat's brain, according to Dr. Shane, the pressure gradient shifted, disrupting the supply of oxygen and nutrients to the brain tissue, causing a disruption in the function of the brain cells -- which then degenerated. *Id.* at 111. It was the "temporal relationship to vaccine" that made Mat's death a vaccine-related encephalopathy, according to Dr. Shane. Tr. at 103. Doctor Rorke-Adams proceeded, however, to explain why Mat's pathology did not exhibit signs of cytotoxic edema.⁶ *Id.* at 182-83. She noted that with cytotoxic edema, the tissue from Mat's brain would appear spongelike -- a spongiform change caused by certain cells, the oligodendrocytes, swelling -- and that she did not see evidence of this. *Id.* at 183.

To support his conclusion that Mat died from a vaccine-related encephalopathy, Dr. Shane described slides of Mat's brain tissues that showed "halos" around the blood vessels. *Id.* at 107 (discussing Pet.'s Ex. 25-1). Halos, according to Dr. Shane, occur when edema fluid⁷ pushes the brain tissue away from the blood vessels. *Id.* at 107; *see also* Tr. at 109 (describing halos). Slides of Mat's brain tissue, Dr. Shane opined, showed that Mat's blood vessels had become "tiny little slits" because they had become compressed by edema fluid. *Id.* at 108.

⁶ Enlarging the disagreement between experts, Dr. Shane opined that an asphyxial death would have produced cytotoxic edema and not the vasogenic edema that he testified the brain tissue slides showed. Tr. at 118.

⁷ Doctor Shane described edema fluid as the fluid that escapes from inside a blood vessel when endothelial cells are separated from the blood vessel. Tr. at 110.

Respondent's expert disagreed with Dr. Shane and opined that the dilated spaces around the collapsed blood vessels were entirely normal because "blood vessels are compressed unless they have a lot of blood in them." *Id.* at 189. She described the spaces around the blood vessels as "shrinkage artifact." *Id.* at 191. Artifacts occur when the water in the brain is replaced by formaldehyde during the preservation process, causing the retraction of tissue around the cells. *Id.* at 207. Doctor Shane countered that with formaldehyde shrinkage, there would be irregular spaces between the tissue and the cells, and not the balloon-like spaces seen in the slides. *Tr.* at 232. He further opined that if the areas around the blood vessels were not halos, but were in fact artifacts, the blood vessels would not be slit-like but would retain the shape of a normal blood vessel. *Id.* at 108.

Doctor Rorke-Adams went on to opine that a separation of the endothelial cells from the walls of the blood vessels, described by Dr. Shane as a symptom of an encephalopathy, was actually caused by an increase in pressure in the vascular system. *Id.* at 182. This increase in pressure, which allowed some of the blood to leak out of the veins and capillaries in the white matter of Mat's brain, was to her a sign of an asphyxial death. *Id.* Doctor Rorke-Adams then opined that she saw no signs of vasogenic edema as claimed by Dr. Shane. *Id.*

Along with vascular edema, Dr. Shane also testified that he found a proliferation of glial cells, indicating a brain injury, in the slides of Mat's brain. *Tr.* at 113-14. Regarding petitioner's exhibit 25-3, Dr. Shane testified that the cluster of dark purple cells -- which he identified as polymorph nuclear leukocytes -- were inflammatory cells. *Id.* at 113, 287-88. Doctor Shane testified that no extent of glial proliferation in a brain is normal because if glial cells are proliferating, they are reacting to some injury. *Id.* at 114. Whereas Dr. Shane opined that the clusters of dark purple dots represented polymorph nuclear leukocytes, *id.* at 288, Dr. Rorke-Adams opined that the dots were primitive cells -- neuroblasts -- which ultimately disappear but are still found in a baby's brain. *Id.* at 193, 306. Doctor Shane disagreed with Dr. Rorke-Adams, believing that any neuroblasts would be in the brain itself rather than near a blood vessel and would have disappeared by Mat's age. *Tr.* at 237, 288.

Doctor Rorke-Adams also noted that some glial cells were present, but "looked perfectly fine" and did not reflect an "abnormality." *Id.* at 193 (describing Pet.'s Ex. 25-2). She opined that it was not uncommon to find an increased number of glial cells in a baby's brain and called the finding "nonspecific." *Id.* at 187. Although she detected an increased number of glial cells, she opined that a "negative stimulus" occurring twelve to sixteen hours earlier -- the vaccination -- could not have led to the population she saw. *Id.* at 194-95 (noting glial cells on slide 25-5), 287. During cross-examination, Dr. Rorke-Adams conceded that Mat had an "excessive number of glial cells." *Id.* at 208. She then noted that she normally does not see the degree of gliosis that was present in Mat's brain in all baby brains. *Tr.* at 212.

The experts also disagreed over the significance of the weight of Mat's brain. His brain, which weighed 755 grams, was, according to Dr. Shane, at least 40 percent heavier than a normal child of his age. *Id.* at 117-18. The doctor concluded that the only thing that could have produced such a heavy brain weight in a child of Mat's age was edema. *Id.* at 118. Doctor

Shane also testified that the medical examiner should have found that Mat's brain was heavy. *Id.* at 149-50. Respondent's expert, however, testified that Mat's brain weight was entirely within the normal limits. *Id.* at 173. She opined that because Mat was a very big baby, and because the weight of all of his organs was at the 95th percentile, his brain weight was normal for his size.⁸ *Id.* at 173, 200-06. And in response to a question from the Special Master, Dr. Rorke-Adams agreed that it would be appropriate to compare the expected brain weight of a five month old baby to Mat's, as his body was the average length for a five month old. Tr. at 223.

The disagreement between the experts continued over the Medical Examiner's finding. Doctor Shane testified that despite the Medical Examiner's conclusion that Mat died from positional asphyxia, no evidence supported this finding. *Id.* at 118. The doctor testified, without textual support, that one would expect to find petechial hemorrhages in a positional asphyxia death. *Id.* Doctor Rorke-Adams, however, argued that Dr. Shane's testimony was incorrect because petechial hemorrhages are not always present with asphyxial deaths. *See id.* at 184 (describing circumstances where a person dies an asphyxial death but does not exhibit petechial hemorrhages). Doctor Rorke-Adams subsequently presented support for her assertion. *See Resp.'s Ex. G.*

The experts also disagreed about the significance of the shape of Mat's anterior fontanelle. The emergency room doctor had noted that Mat's anterior fontanelle⁹ was sunken and the Medical Examiner had noted that Mat's fontanelle was flat. *See Tr.* at 186; *see also Pet.'s Ex. 11* at 2 (describing the anterior fontanelle as flat) *and Pet.'s Ex. 9* at 2 (describing anterior fontanelle as sunken). Doctor Shane declared that the shape of Mat's fontanelle did not necessarily indicate whether Mat's brain was swollen or not. Tr. at 147. Respondent's expert disagreed with Dr. Shane's assessment that even though Mat's fontanelle was flat at death, it still could have been swollen when he was alive. *Id.* at 185-86. According to Dr. Rorke-Adams, had Mat's brain been swollen, his fontanelle would have remained "tense" after death. *Id.* 185. Doctor Shane, however, opined that a bulging fontanelle would be a "function of a beating heart" and that sometimes a brain can swell without bulging a fontanelle. *Id.* at 229-30.

⁸ Doctor Rorke-Adams also testified that Mat's brain weight was normal, under the mistaken belief that it was within two standard deviations of the mean for a baby of his age. Tr. at 173, 175; *see also id.* at 204 (testifying that a data point within two standard deviations of the mean is considered normal). After Dr. Shane had explained that Mat's brain weight was actually 10% greater than two standard deviations, *see id.* at 231, Dr. Rorke-Adams admitted that she had made a mathematical error. *Id.* at 242.

⁹ A fontanelle is a soft spot on a baby's head. Tr. at 185. Doctor Rorke-Adams explained that a sunken fontanelle indicates dehydration. *Id.* A tense one, on the other hand, indicates the brain is swollen or there is a brain hemorrhage, tumor, meningitis or some other cause leading to swelling. *Id.* at 185-86.

Doctor Rorke-Adams stated that Mat's temperature -- 99 degrees Fahrenheit -- did not affect her analysis because it was possible that Mat's death and his temperature were not related. *Id.* at 221. "You can have an individual with a very high temperature who dies of asphyxia, or you can have a person with a normal temperature who dies of asphyxia, but one is not related to the other," she opined. Tr. at 222-23. Doctor Shane disagreed with this finding and opined that Mat's temperature must have been much higher than 99 degrees Fahrenheit when he died and that a high temperature was evidence of an encephalopathy. *See id.* at 132.

During the second hearing held by the Special Master, the experts battled over the presence of glial cells in Mat's brain. *See id.* at 264. The experts had disagreed as to the timing of the development of glial cells. *Id.* Doctor Shane opined that the number of astrocytes -- a type of glial cell that responds to injury -- would have peaked at 15 hours, which is around the time after receiving the vaccination that Mat died. *See id.* at 269 (explaining Pet.'s Ex. 29 (Giora Z. Feuerstein et al., *The Role of Cytokines in Neuropathology of Stroke and Neurodevelopment*, 5 Neuroimmunomodulation 142, 146 (1998) [hereinafter *The Role of Cytokines*])), 286. Doctor Shane observed swollen astrocytes on the slides of Mat's brain tissue and indicated that the vaccination caused the swollen astrocytes because of the temporal relationship between the time of the vaccine and Mat's death. *See id.* at 269-73 (addressing Pet.'s Ex. 25-2). Doctor Rorke-Adams found Dr. Shane's use of *The Role of Cytokines* to be "totally irrelevant" because Mat's brain evidenced no edema in her opinion. Tr. at 303.

Doctor Rorke-Adams opines that the slides of Mat's brain did not depict any Alzheimer Type II astrocytes, a type of swollen astrocyte that is "the earliest change in response to injury." *Id.* at 295 (discussing respondent's exhibit F, containing her book Lucy Balian Rorke, MD, *Pathology of Perinatal Brain Injury* 6-8 (1982) and 6 *Greenfield's Neuropathology* 72-76, 116-24 (1997) [hereinafter *Greenfield's*]). The collection of astrocytes -- gliosis -- present in Mat's brain was characteristic of astrocytes of a chronic nature according to Dr. Rorke-Adams. *Id.* at 297-98. She opined that, based on an exhibit she submitted -- Kiran S. Panickar and Michael D. Norenberg, *Astrocytes in Cerebral Ischemic Injury: Morphological and General Considerations*, Wiley InterScience 287-98 (2005) [hereinafter Panickar and Norenberg] -- astrocyte reaction following an injury peaks at approximately two weeks (with astrocytes known as gemistocytes). Tr. at 298; Resp.'s Ex. F. She found presence of gliosis on Mat's brain, but opined that it had no relationship to Mat's vaccination. *Id.* at 300-01.

C. The Special Master's Decision Denying Compensation

In his February 19, 2008 decision, the Special Master -- after a review of the record and examination of the Vaccine Act -- determined, based upon a preponderance of the evidence, that the DTaP vaccination had not caused Mat's death. *See Nordwall*, 2008 WL 857661, at *1. The Special Master found that the petitioner had failed to prove either a table injury or causation in fact. *Id.* at *5, *11.

The table injury claim was first considered. Finding no evidence of a seizure, the Special Master determined that for Mat to have suffered an "acute encephalopathy" as defined by the

Vaccine Act, he would have needed to exhibit a “decreased response to his environment, but this decreased response cannot be evidenced by fussiness or crying.” *Id.* at *5. The Special Master found that Ms. Nordwall failed to meet her burden of proving that Mat suffered an encephalopathy because no evidence established that he had a decreased response to his environment. *Id.*

The Special Master rejected Ms. Nordwall’s argument that “inflammation on the brain and high temperature, as well as vasogenic edema . . . is direct evidence of encephalopathy.” *Id.* The Special Master noted that regardless of whether these factors were considered by the medical community to be symptoms of an encephalopathy, this argument was not relevant to petitioner’s table injury claim, as he was bound by the regulatory definition of “encephalopathy.” *Id.* Finally, as to the table injury, the Special Master rejected Ms. Nordwall’s argument that Mat’s death was evidence in itself of an encephalopathy, noting that the Federal Circuit rejected this argument in *Hodges v. Secretary of Health and Human Services*, 9 F.3d 958, 960-61 (Fed. Cir. 1993). *Nordwall*, 2008 WL 857661, at *5.

After determining that Mat had not suffered a table injury, the Special Master next determined whether Mat had suffered a causation-in-fact vaccine injury. He found that Ms. Nordwall had not proven her case. *Id.* at *6, *11. Petitioner was able to present a medical theory for Mat’s death and show a proximate temporal relationship between Mat’s vaccination and his death, satisfying two of the three required elements for such a claim. *Id.* at *11. The Special Master found, however, that the petitioner was unable to prove that a logical sequence of cause and effect linked the vaccination to the injury. *Id.* Instead, the Special Master determined that Mat died from positional asphyxia. *Id.* at *12. In reaching his decision, the Special Master relied on the Medical Examiner’s report which cited “positional asphyxia” as Mat’s cause of death. *Id.* (citing Pet.’s Ex. 11 at 1, 6).

To determine whether a causation-in-fact injury had occurred, the Special Master evaluated the testimony of Dr. Shane and Dr. Rorke-Adams. *Nordwall*, 2008 WL 857661, at *6. As was related above, Dr. Shane believed that Mat suffered a vaccine-related encephalopathy, whereas Dr. Rorke-Adams opined that Mat died from positional asphyxia. *Id.* Because the experts did not agree on Mat’s cause of death and held diverging opinions, the Special Master had to determine which expert was more persuasive. *Id.* The Special Master found that Dr. Rorke-Adams “more persuasively demonstrated that the verified facts fit her theory.” *Id.*

The Special Master disagreed with Dr. Shane’s opinion that Mat’s brain weight evidenced edema, finding instead that Mat’s brain was the appropriate weight for a child of his size. *Id.* at *7. Agreeing with Dr. Rorke-Adams,¹⁰ the Special Master determined that because

¹⁰ In her post-trial brief, Ms. Nordwall criticized Dr. Rorke-Adams for analyzing Mat’s brain weights using multiples of a standard deviation. *See Nordwall*, 2008 WL 857661, at *7. The Special Master found that, though Dr. Rorke-Adams’ standard deviation calculation contained an error, it was irrelevant because she conceded this error and presented other credible

Mat was a large child -- at ten-weeks old he was the average size of a five-month old infant -- his brain weight was virtually the same as the average brain weight for a five-month old, 746 grams. *Id.*

The Special Master then addressed Dr. Shane's opinion that the eight autopsy slides of Mat's brain showed a proliferation of glial cells, causing vasogenic edema. *Nordwall*, 2008 WL 857661, at *7. Before reviewing the substance of the testimony presented before him, the Special Master noted that "this topic is difficult to understand because the experts not only differ in their opinions about how the brain responds to injury, but also in their interpretation of the same slides." *Id.* Without having training and experience with a microscope, the Special Master noted, resolving the dispute between the experts was difficult. *Id.*

The Special Master found Dr. Rorke-Adams to be more persuasive in her arguments for two basic reasons. First, although both she and Dr. Shane were recognized as experts in neuropathology, Dr. Rorke-Adams possessed superior credentials. *Id.* at *8. The Special Master found that Dr. Rorke-Adams's many "accomplishments indicate that [her] peers, who are presumably well informed about their own field, recognize her skills." *Id.* Second, the Special Master found Dr. Rorke-Adams' demeanor to be more persuasive. *Id.* Doctor Rorke-Adams presented her opinions "confidently" and her testimony presenting her underlying reasoning was "well organized, showing her underlying reasoning." *Nordwall*, 2008 WL 857661, at *9.

Next, the Special Master considered the state of Mat's anterior fontanelle at his death. *Id.* at *9. The Special Master found the emergency room doctor's description of Mat's fontanelle as "sunken" persuasive because the doctor was examining Mat for the specific purpose of trying to revive the baby. *Id.* The Special Master disregarded Dr. Shane's attempt to explain that a fontanelle would not remain bulging after death by noting that Dr. Shane did not explain how the emergency room doctor could have found a "sunken" fontanelle on a patient undergoing CPR. *Id.* at *10. Because "fact finders may reject opinion evidence when the opinion is based upon facts not supported in the record," the Special Master rejected Dr. Shane's opinion. *Id.*

The Special Master also addressed petitioner's argument that if Mat had died from positional asphyxia, the Medical Examiner would have found petechial hemorrhaging. *Id.* After the Special Master invited the parties to submit literature supporting the experts' conflicting testimony on this point, Dr. Rorke-Adams submitted literature noting that petechial hemorrhaging was not a reliable indicator of an asphyxial death. *Nordwall*, 2008 WL 857661, at *10. Doctor Shane submitted no literature supporting his position. *Id.* Because Dr. Shane failed to present any supporting literature for so important a point, his testimony on this issue was found to lack credibility. *Id.*

evidence supporting her opinion that Mat's brain weight was appropriate for his size. *Id.*

D. Petitioner's Motion for Review of the Special Master's Decision

The petitioner, on March 19, 2008, filed a motion for review and memorandum of objections pursuant to VR 23 and VR 24. Petitioner raised two objections to the Special Master's decision. *See generally* Pet.'s Mot. for Rev. and Pet.'s Mem. of Points of Error ("Pet.'s Mem.") (stating petitioner's objections to the Special Master's decision). First, Ms. Nordwall argues that the Special Master's denial of compensation was in error because the respondent did not present evidence of a condition other than encephalopathy that could have caused Mat's death. *See* Pet.'s Mem. at 3. Second, petitioner argued that the Special Master erred in relying on the respondent's expert, Dr. Rorke-Adams, rather than on Dr. Shane, because Dr. Rorke-Adams's interpretation of the evidence "contradicted . . . authoritative medical literature [and was] supported solely by factors deemed obvious by respondent's expert, but which are not mentioned at all in that literature." *Id.* On July 24, 2008, the Court heard oral argument in the case.

II. DISCUSSION

A. Legal Standard

1. Court's Standard of Review of a Special Master's Decision

Under the Vaccine Act, the special master must award compensation if, "on the record as a whole," he finds "that the petitioner has demonstrated by a preponderance of the evidence" the claims of the petition. 42 U.S.C. § 300aa-13(a)(1)(A). By this same standard, the special master must find that nothing else is responsible for causing the injury. *Id.* § 300aa-13(a)(1)(B). "The special master or court may not make such a finding based on the claims of a petitioner alone, unsubstantiated by medical records or by medical opinion." *Id.* § 300aa-13(a)(1). The special master must consider all the "relevant medical and scientific evidence contained in the record," including any "diagnosis, conclusion, medical judgment, or autopsy . . . regarding the nature, causation, and aggravation of petitioner's illness, disability, injury, condition, or death" and "the results of any diagnostic or evaluative test which are contained in the record and the summaries and conclusions." *Id.* § 300aa-13(b)(1). The Act further specifies that "[a]ny such diagnosis, conclusion, judgment, test result, report, or summary shall not be binding on the special master or court." *Id.* The special master is entrusted with evaluating the "weight to be afforded to any" of these sources of information. *Id.* A special master's "assessments of the credibility of the witnesses" are "virtually unchallengeable on appeal." *Lampe v. Sec'y of Health & Human Servs.*, 219 F.3d 1357, 1362 (Fed. Cir. 2000). This deference rests on the special master's "broad discretion in determining credibility because he saw the witnesses and heard the testimony." *Bradley v. Sec'y of the Dep't of Health & Human Servs.*, 991 F.2d 1570, 1575 (Fed. Cir. 1993).

Medical records "warrant consideration as trustworthy evidence." *Cucuras v. Sec'y of the Dep't of Health & Human Servs.*, 993 F.2d 1525, 1528 (Fed. Cir. 1993). These records are "generally contemporaneous to the medical events," and "accuracy has an extra premium"

because a patient's proper treatment is "hanging in the balance." *Id.* Moreover, because medical records are contemporaneous documentary evidence, conflicting oral testimony "deserves little weight." *Id.* (citing *United States v. United States Gypsum Co.*, 333 U.S. 364, 396 (1947)).

In reviewing a special master's decision, the Court may "set aside any findings of fact or conclusion of law of the special master found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law and issue its own findings of fact and conclusions of law." 42 U.S.C. § 300aa-12(e)(2)(B). Findings of fact are to be reviewed under the "arbitrary and capricious" standard; legal questions are to be reviewed under the "not in accordance with law" standard; and an abuse of discretion standard is used for discretionary rulings. *See Munn v. Sec'y of the Dep't of Health & Human Servs.*, 970 F.2d 863, 870 n.10 (Fed. Cir. 1992). With respect to the arbitrary and capricious review, "no uniform definition of this standard has emerged," but it is "a highly deferential standard of review" such that "[i]f the special master has considered the relevant evidence of record, drawn plausible inferences and articulated a rational basis for the decision, reversible error will be extremely difficult to demonstrate." *Hines v. Sec'y of the Dep't of Health & Human Servs.*, 940 F.2d 1518, 1527-28 (1991).

2. Standards of Causation in Vaccine Cases

a. Standard of causation in table injury cases.

Compensation is obtained under the Vaccine Act in two ways. First, a petitioner may bring a "table" case. *See Pafford v. Sec'y of Health & Human Servs.*, 451 F.3d 1352, 1355 (Fed. Cir. 2006) (discussing table injuries). With a table case, the petitioner bears the initial burden of proving that an injury listed in the Vaccine Injury Table, 42 C.F.R. § 100.3(a) (2007), occurred within the prescribed period of time. *Id.* Should the petitioner prove that the injury occurred within the prescribed time period, "the petitioner earns a presumption of causation." *Id.* "At this point, the burden shifts to the respondent to prove that a factor unrelated to the vaccination actually caused the illness, disability, injury, or condition." *Id.*

b. Standard of causation on a causation-in-fact basis.

A special master may also award compensation through an "off-table" or "causation-in-fact" case. *Id.* Causation-in-fact -- the basis for the legal entitlement to compensation when a petitioner's injury is either not listed in the Vaccine Injury Table or did not occur within the time period set forth in the Table -- must be proven under two formulations adopted by the Federal Circuit. *See Pafford*, 451 F.3d at 1355. The petitioner must establish that the vaccine was both a "but-for" cause of the injury and a substantial factor in causing the injury. *See Shyface v. Sec'y of Health & Human Servs.*, 165 F.3d 1344, 1352 (Fed. Cir. 1999). Under a three-part test more recently articulated by the Circuit, the petitioner must prove "(1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the vaccination was the reason for the injury; and (3) a showing of a proximate temporal relationship between vaccination and injury." *Althen v. Sec'y of Health & Human Servs.*, 418

F.3d 1274, 1278 (Fed. Cir. 2005).¹¹ The petitioner bears the burden of proving causation by preponderant evidence. *See* 42 U.S.C. § 300aa-13(a)(1)(A).

A petitioner must show more than a proximate temporal relationship between the vaccination and the injury to meet her burden of showing actual causation. *Althen*, 418 F.3d at 1278; *see also Grant v. Sec’y of the Dep’t of Health & Human Servs.*, 956 F.2d 1144, 1148 (Fed. Cir. 1992). Furthermore, “[t]here may well be a circumstance where it is found that a vaccine *can* cause the injury at issue and where the injury was temporally proximate to the vaccination, but it is illogical to conclude that the injury was actually caused by the vaccine.” *Capizzano v. Sec’y of Health & Human Servs.*, 440 F.3d 1317, 1327 (Fed. Cir. 2006) (emphasis in original). A petitioner could meet the first and third prongs of the *Althen* test without “satisfying the second prong when medical records and medical opinions do not suggest that the vaccine caused the injury, or where the probability or coincidence of another cause prevents the claimant from proving that the vaccine caused the injury by preponderant evidence.” *Id.*

B. Petitioner’s Objections to the Special Master’s Decision

In her motion for review, Ms. Nordwall raises several objections to the Special Master’s decision. *See* Pet.’s Mem. The basis of petitioner’s appeal is the temporal association between the vaccination and Mat’s death, bolstered by his elevated temperature at the time he was declared dead, and the autopsy slides. *See* Pet.’s Mem. at 3, 8-9 (discussing petitioner’s theory of the case). Petitioner divides her argument into two sections. *Id.* at 4, 6. She first argues that the Special Master erred in attributing Mat’s death to positional asphyxia due to a hazardous sleeping environment. *Id.* at 3, 4-5. According to petitioner, despite the Medical Examiner’s report and the testimony of the respondent’s expert, no evidence in the record supports a finding of death by positional asphyxia due to a hazardous sleeping environment. *Id.* at 5. Rather, according to petitioner, a reaction to the vaccine caused the positional asphyxia leading to Mat’s death, by disabling the baby’s reflexes. *Id.*

Second, and more substantially, Ms. Nordwall argues that the Special Master erred in relying on respondent’s expert -- Dr. Rorke-Adams -- because her interpretation of the evidence allegedly conflicts with the medical literature in the record. Pet.’s Mem. at 6. Petitioner asks the Court to overturn the Special Master’s credibility determination, as he found Dr. Rorke-Adams to be more credible than the petitioner’s expert, Dr. Shane. *See Id.* at 7. Petitioner provides several examples where the testimonies of Dr. Rorke-Adams and Dr. Shane conflict as support for her argument that the Special Master’s decision was arbitrary, capricious, and not in accordance with law. *See id.* at 9-20 (claiming Special Master error in relying on Dr. Rorke-Adams to find no vasogenic edema causing ischemia, no swollen astrocytes, and no problem with the appearance of gliosis in Mat’s brain).

¹¹ Although the Federal Circuit has described the *Althen* test as an “alternative,” the very same opinion makes plain that the *Althen* “prongs must cumulatively show” that the *Shyface* standard is met. *Pafford*, 451 F.3d at 1355.

1. Evidence in the Record Supports the Finding that Positional Asphyxia, Unrelated to the Vaccine, was the Cause of Death

Petitioner's first objection is to the finding that positional asphyxia, unrelated to the vaccine, caused Mat's death. See Pet.'s Mem. at 4-5. This finding is attacked in two separate ways. Initially, petitioner took issue with the Medical Examiner's statement that Mat was "found in a hazardous sleeping environment." Pet.'s Mem. at 4 (citing Pet.'s Ex. 11 at 1). Petitioner argued that without such an environment, and considering that Mat could move his head, the only explanation for Mat's suffocation was that he had suffered "a decrease in consciousness, which disabled his reflexes," and thus there must have been a vaccine-caused encephalopathy. *Id.* at 5. In a reply paper, however, petitioner added the argument that since she testified that she found Mat with no obstruction to his mouth and nose, and since there were no signs of asphyxia such as petechial hemorrhaging, the record does not support death by positional asphyxia. Pet.'s Reply at 5-6.¹² Thus, petitioner appears to be arguing that there was no positional asphyxia, but the vaccine caused it.

Concerning the issue of whether Mat was "found in a hazardous sleeping environment," Pet.'s Ex. 11 at 1, petitioner points to a police record which stated that the house "did not appear to be a health hazard." Pet.'s Mem. at 4-5 (citing Pet.'s Ex. 13 at 8). But this hardly contradicts the Medical Examiner's findings, which apparently referenced the baby's position among the pillows and in his blanket. As Dr. Shane pointed out, a hazardous sleeping environment could be something as simple as not positioning a baby correctly. See Tr. at 124 (arguing he saw no evidence of a hazardous sleeping environment in the case). Doctor Rorke-Adams opined that based on the photographic exhibits of Mat's position on the night he died, he could have moved into a position making it impossible for him to breathe. *Id.* at 166.

Furthermore, based upon the literature submitted by Dr. Rorke-Adams, the lack of petechial hemorrhaging did not preclude a finding of positional asphyxia. See Tr. at 184 (describing Resp.'s Ex. G as noting that a person can die an asphyxial death without exhibiting petechial hemorrhaging). Doctor Shane had testified to the contrary that if a medical examiner finds "no petechiae, it's not an asphyxial death." *Id.* at 135. He was given the opportunity to submit literature to support this position, and did not. See *Nordwall*, 2008 WL 857661, at *10. The Court cannot fault the Special Master for relying on the opinion of one expert bolstered by medical literature over the unsupported opinion of another expert.

¹² During oral argument, petitioner additionally argued that a portion of the Medical Examiner's report was inconsistent with its conclusion of positional asphyxia, based on the note under the heading "Microscopic Examination," which reads: "Neoplastic, hypoxic, inflammatory, and reactive change are not identified." Transcript of Oral Argument (July 24, 2008) ("Rev. Tr.") at 10-11 (citing Pet.'s Ex. 11 at 5). Petitioner conceded, however, that this point was not raised before the Special Master. See *id.* at 16. Whether this issue was waived, see VR 8(f), or merely lacks testimonial support, either way it provides no basis for overturning the Special Master's finding.

The Special Master found that Mat's death was consistent with positional asphyxia based upon not only Dr. Rorke-Adams's testimony, but also upon the Medical Examiner's report. *Nordwall*, 2008 WL 857661, at *11-12. An autopsy report by a medical examiner is without question a contemporaneous medical record. *See, e.g., Gurr v. Sec'y of Health & Human Servs.*, 37 Fed. Cl. 314, 318 (1997); *Piper v. Sec'y of Health & Human Servs.*, 29 Fed. Cl. 628, 603 (1993). Such records "warrant consideration as trustworthy evidence." *Cucuras*, 993 F.2d at 1528. While such records may not have been created in the context of diagnosing and treating a patient, they are contemporaneous records made by a health professional outside the context of litigation, and should be given the same probative weight as other medical records.

Petitioner's argument that positional asphyxia could not have caused Mat's death rests, ultimately, on just her own testimony. *See* Pet.'s Mem. at 1 (citing Tr. at 76, 85). Because the Special Master provided a reasoned analysis for his decision that Mat died from positional asphyxia, supported by evidence in the record, the Court finds petitioner's argument on this point to be unfounded. *See* 42 U.S.C. §300aa-13(a)(1) (findings cannot be made on a petitioner's word alone, but must be substantiated by medical opinion).

The second part of petitioner's objection -- that a vaccine-induced encephalopathy must have caused the positional asphyxia -- fares no better. Petitioner seems to base this argument on the testimony of Mat's father, who testified that Mat "was able to move his head from side to side, lift himself up . . . with two hands for a small amount of time," but "was unable to roll from side to side." Tr. at 15. Mat's father, a medical doctor who was not providing expert testimony, also opined that Mat would have been able to "protect his airway" had he not been suffering from an encephalopathy, by using an arm. Tr. at 35-36; *see also* Pet.'s Reply at 6-7.

Petitioner contends that Mat's ability to move his head makes this case similar to *Kincaid v. Secretary of Health and Human Services*, a case where the special master found that a child died due to anoxic encephalopathy resulting from a vaccination. Pet.'s Mem. at 5 (citing *Kincaid v. Sec'y of Health & Human Servs.*, No. 02-1766, 2003 WL 23119834 (Sp. Mstr. Nov. 26, 2003)). But among the myriad factual differences between the two cases are that in *Kincaid*, the pathologist performing the autopsy found acute cerebral edema and no evidence of suffocation. *Kincaid*, 2003 WL 23119843, at *1-2. It is quite a different thing to argue that there was suffocation, but an encephalopathy caused it. In *Kincaid*, the Special Master determined that the child's death was related to the vaccine because there was no other known factor unrelated to the vaccine that could have caused her death, and evidence existed of edema and increased intercranial pressure. *Id.* *9-10. Petitioner tries to put the cart before the horse by arguing that suffocation is evidence of a vaccine-induced encephalopathy. Petitioner must first establish by a preponderance of the evidence that there *was* an encephalopathy, and that it was caused by the vaccine. This part of petitioner's first objection, then, cannot be separated from the second objection, to which the Court now turns.

2. The Special Master's Determination of Expert Witness Credibility Cannot be Disturbed

Petitioner tries to cast the dispute between the experts as a question of law, contending that the Special Master impermissibly raised her burden to proof “beyond a reasonable doubt” or “to scientific certainty.” Pet.’s Mem. at 6; Pet.’s Reply at 3. Apparently, petitioner believes that, at best, all respondent’s expert witness was able to do was to cast some doubt upon her expert witness’s interpretation of the evidence. But a close review of the record, and of the decision by the Special Master, reveals that two experts qualified to provide opinions in the field of neuropathology, each having performed thousands of autopsies on babies,¹³ were in complete disagreement on a number of key points. The Special Master did not depart from the normal standard of proof, but merely found one expert more credible than the other. While petitioner appears to acknowledge tacitly that credibility determinations are not reviewable, she notes that “neither a resume nor demeanor can make the observable evidence disappear, nor does it outweigh authoritative medical literature.” Pet.’s Mem. at 9. Thus, she identifies a variety of topics concerning which, she seems to contend, the Court can tell by reading technical medical literature and reviewing slides that the government’s expert was wrong. But because the experts expressed completely different conclusions and provided different explanations for the evidence, the case turned on which expert the Special Master found more credible.

Petitioner argues that the Special Master should have relied on Dr. Shane’s finding that Mat died from a vaccine-related encephalopathy. This finding was based upon Mat’s good health fifteen hours before death, when he received a vaccination; his sweatiness and 99 degree Fahrenheit temperature almost an hour after he was found unresponsive; signs of inflammation in the autopsy slides; a heavy brain; and medical literature purportedly linking these factors to brain inflammation. *Id.* at 8. For each of these factors, however, Dr. Rorke-Adams presented a different explanation unrelated to brain inflammation. *See* Tr. at 164-65 (opining that child was found under a blanket which caused asphyxiation and showed signs of asphyxiation when Ms. Nordwall commenced CPR); *see also id.* at 168 (denoting sweatiness as a primary clinical sign of shock); *id.* at 172-73 (opining that Mat’s brain weight was within normal limits because he was a large baby); *id.* at 180-82, 185-86 (describing congestion in Mat’s organs and discussing lack of brain swelling as evidenced by the assessment of emergency room personnel of sunken anterior fontanelle); and *id.* at 221-22 (noting that a high temperature and asphyxia are not mutually exclusive).

Petitioner argues that the Special Master erred in finding Dr. Rorke-Adams more credible in her analysis of the slides of Mat’s brain tissue. Pet.’s Mem. at 9-14. Doctor Rorke-Adams opined that the balloon spaces surrounding the blood vessels on the slides were artifacts from the process of preserving the child’s brain in formaldehyde. Tr. at 191. Petitioner’s expert, however, argued that the spaces were halos created by fluid which leaked from the blood vessels and constricted them, causing the vessels to look like slits. *Id.* at 107. Doctor Rorke-Adams

¹³ *See* Tr. at 96-97 (experience of Dr. Shane), 156-57 (experience of Dr. Rorke-Adams).

presented no textual support for her assertion that the halos were actually artifacts of the preservation process. Petitioner's expert did, however, cite to Chapter 8 of *Greenfield's* as support for his opinion that the balloon spaces were caused by edema fluid as a result of a vaccine-related encephalopathy. But it is hard, if not impossible, for one with an untrained eye to determine if the objects in these slides match the description in the treatise.¹⁴

Petitioner also objects to the Special Master's reliance on Dr. Rorke-Adams regarding the presence or absence of astrocytes in Mat's brain tissue. Pet.'s Mem. at 14. Doctor Rorke-Adams, supported by her own textbook, opined that swollen astrocytes, a specific type of glial cell that responds to brain injury, were not present in the slides of Mat's brain tissue. See Tr. 293-95; see also *Greenfield's* at 117. Along with providing the Special Master with a copy of pages from her textbook, Dr. Rorke-Adams supported her opinion with two other sources. See Resp.'s Ex. F (citing *Greenfield's* at 72-76, 116-24 and Panickar and Norenberg at 287-98).

To support his assertion that swollen astrocytes were present and could have caused damage within fifteen hours, Dr. Shane submitted *The Role of Cytokines*, a publication Dr. Rorke-Adams found irrelevant. Tr. at 303. Doctor Rorke-Adams disagreed with Dr. Shane over whether any astrocytes were present (but acknowledged signs of chronic gliosis), and opined that what Dr. Shane identified as astrocytes were actual residual neuroblasts. *Id.* at 303-06. She based this assessment on her experience of "looking at baby brains for 45 years of my life." *Id.* at 306. Doctor Shane, on the other hand, insisted that neuroblasts would no longer be present in the brain of a child Mat's age. *Id.* at 288.

The Court could continue on in this vein, but it should by now be obvious that it takes an expert to make sense of the slides and the literature in the record. Petitioner's expert witness identifies objects as one thing, and respondent's expert says they are something else. The Special Master found Dr. Rorke-Adams to be more credible than Dr. Shane and provided a detailed explanation for this finding. See *Nordwall*, 2008 WL 857661, at *8-9. It is not the job of the Court to second guess the credibility judgment of experts or to reweigh the evidence. See *Bradley*, 991 F.2d at 1575 (holding that because the Special Master saw the witnesses and heard the testimony, he has broad discretion in determining credibility). As a reasonable fact-finder could rely on Dr. Rorke-Adams' credentials alone, especially when faced with wildly diverging scientific explanations, the Special Master's decision must stand. See *Lampe*, 219 F.3d at 1362.

To be sure, the record would be clearer and perhaps easier to understand if both experts had essentially "footnoted" more of their assertions. Neither submitted literature to support their respective, opposing claims regarding the age when neuroblasts would no longer be found in a brain, or how long after death a fontanelle would remain tense or bulging. Doctor Rorke-Adams

¹⁴ The treatise notes that "post vaccinal encephalomyelitis" presents with "narrow grayish zones around the small venules in the white matter." Pet.'s Mot for Rev. at 11 (citing *Greenfield's* at 476). It appears from the slides of the child's brain tissue that the area around the venules is balloon-like and not narrow. See Pet.'s Ex. 25-2; see also Rev. Tr. at 28-29.

opined that the hippocampus area of Mat's brain exhibited signs of asphyxia but she did not submit slides of brain tissue from Mat's hippocampus as evidence. *See* Resp.'s Rule 4(c) Rep. at Att. A; *see also* Tr. at 227-28. And as the Special Master pointed out, Doctor Shane failed to present literature regarding a key argument -- that Mat did not die an asphyxial death because he did not exhibit petechial hemorrhaging. *See Nordwall*, 2008 WL 857661, at *10.

There certainly are aspects of the respondent's expert witness's testimony that, at least when read in print, could be considered as undermining her credibility. For instance, she explained that "it is not at all uncommon to see a few residual neuroblastic cells in this area," Tr. at 306, when describing a portion of a slide showing what appears to be over one hundred of the identified objects -- much more than "a few." *See* Pet.'s Ex. 25-3. And there was her confidently made but erroneous statement that Mat's brain weight fell within two standard deviations of the brain weight for a child of Mat's age and size. *See* Tr. at 172-75, 200-06, 242.¹⁵

But, again, it is not the job of this Court to second guess a special master's credibility determination. There were reasons for a reasonable fact-finder to find doubt in Dr. Rorke-Adams' testimony, but a reasonable fact-finder could also rely on Dr. Rorke-Adams' experience and demeanor in finding her more credible. *See Lampe*, 219 F.3d at 1362. The job of the Court is not to reweigh the evidence considered by the special master. Rather, the Court's job is to ensure the special master considered all relevant evidence, drew plausible inferences, and articulated a rational basis for his decision. *Hines*, 940 F.2d at 1527-28. To prove causation-in-fact, petitioner needed to show by a preponderance of the evidence that the vaccine caused Mat's death. Her expert, Dr. Shane, opined that the evidence demonstrated a brain inflammation consistent with a vaccine injury. The government's expert, Dr. Rorke-Adams, opined that the evidence showed nothing of the kind. Finding that Special Master Moran considered all relevant evidence and articulated a rational basis for relying on Dr. Rorke-Adams, the Court sustains his decision.

CONCLUSION

After reviewing the submissions of the parties, the evidence in the record, the transcript of the hearing, and the decision of the Special Master, and after hearing oral argument, for the foregoing reasons the Court concludes that the Special Master did not err in denying

¹⁵ Another example is Doctor Rorke-Adams's apparent confusion concerning the magnification of photos in her own textbook. Tr. 296-97.

compensation to petitioner under the Vaccine Act. The decision of the Special Master is **SUSTAINED**. The petition for review is **DISMISSED** with prejudice. The Clerk of Court is directed to enter judgment for respondent.

IT IS SO ORDERED.

VICTOR J. WOLSKI
Judge