



# EPIDEMIC ANSWERS

## **Does Mitochondrial Disease Finally Connect the Diverse Medical Symptoms We Now See in Children With Various Health Problems?**

By Alyssa Davi, parent advocate

What is mitochondrial disease and why may it be important to my child with developmental delay, low tone, GI problems, seizures, feeding problems, failure to gain weight, autism, diabetes or neuro-psychiatric symptoms?

Research connecting mitochondrial disease and many diverse medical problems is increasing. Dr. James Anderson, the Director of Program Coordination at the National Institute of Health (NIH) stated that the NIH currently funds more than half a billion dollars in mitochondrial research. Researchers are linking mitochondrial disease with everything from diabetes, autism, mood disorders, bi-polar disorder, schizophrenia, Parkinson's, Alzheimer's, and even some cancers.

Why would mitochondrial disease be involved in such a vast array of disorders? The United Mitochondrial Disease Foundation states,

“Mitochondrial diseases are not one disease, but a group of metabolic diseases. These diseases result from failures of the mitochondria, specialized organelles present in almost every cell of the body. Mitochondria are responsible for providing more than 90% of the energy needed by the body to sustain life and support growth. Food is converted into ATP (stored energy) by means of enzymes in the electron transport chain (or respiratory chain) inside the mitochondria. The process itself is called oxidative phosphorylation. Defects in either the mitochondrial DNA or the DNA of the nucleus can impair this process and cause mitochondrial failure. When mitochondria fail, less and less energy is generated within the cell. When this happens, cell injury and even cell death follow. If this process is repeated on a large scale throughout the body, whole systems begin to fail. The life of the affected person is compromised, changed or even ended.”

Mitochondrial disease tends to affect organs that require the most energy, such as the brain, muscles, gastrointestinal tract, kidney, liver and heart and historically has been very difficult to diagnose because it often presents in such diverse and varied

presentations from person to person. Mitochondrial disease can range from mild to very severe.

Dr. Sumit Parikh, a leading neurologist in the field of mitochondrial medicine has recently published an article called, The Neurological Manifestations of Mitochondrial Disease. In this article, he lists the following associated neurological symptoms with mitochondrial disease in some patients; hypotonia, seizures, developmental delay, epilepsy, dysmotility (constipation, diarrhea and/or pseudo obstruction episodes), migraines, fatigue, exercise intolerance, sensitivity to general anesthesia, white matter disease and neuropathy.

History of developmental regression(s) following fever, illness or anesthesia has also been reported in children with mitochondrial disease in published articles. Dr. Richard Boles, at the Mitochondrial Functional Disorders Program in the Division of Medical Genetics at Children's Hospital Los Angeles, believes that many “functional disorders” are rooted in mitochondria dysfunction. He defines functional disorders as “Conditions in which consistent “structural” anomalies are not found, and in which disease is believed to be caused by abnormal cellular function. Some of these conditions are traditionally considered to be related to “medical” or “physical” health and others to “mental” or “psychological” health. Functional disorders can range from mild to severe. Some selected examples include:

Autism Spectrum Disorders, chronic abdominal pain, severe gastrointestinal dysmotility, chronic fatigue syndrome, chronic pain disorders, migraines, cyclic vomiting syndrome, fasting intolerance, ketotic hypoglycemia and episodic metabolic acidosis. There are still many unanswered questions about mitochondrial disease and a lot of research still needs to be completed to answer these questions. However, we could be getting closer to understanding why so many children are currently sick with a multitude of medical problems, which to the untrained clinician seemed unrelated, but may be ultimately connected on a cellular level.

Do you think that your child with an ASD might have mitochondrial dysfunction? Read more about Autism Spectrum Disorders secondary to Mitochondrial Dysfunction [HERE](#).

To learn more about mitochondrial dysfunction and your child's health, please visit Epidemic Answers: <http://www.epidemicanswers.org/epidemic/biological-dysfunction/mitochondrial-dysfunction/>