Infantile Refsum Disease

National Institute of Neurological Disorders and Stroke (NINDS)

Source

National Institute of Neurological Disorders and Stroke (NINDS). Infantile Refsum Disease Information Page.

Infantile Refsum disease (IRD) is a medical condition within the Zellweger spectrum of perixisome biogenesis disorders (PBDs), inherited genetic disorders that damage the white matter of the brain and affect motor movements. PBDs are part of a larger group of disorders called the leukodystrophies. The Zellweger spectrum of PBDs include related, but not more severe, disorders referred to as Zellweger syndrome (ZS) and neonatal adrenoleukodystrophy. Collectively, these disorders are caused by inherited defects in any one of 12 genes, called PEX genes, which are required for the normal formation and function of peroxisomes. Peroxisomes are cell structures required for the normal formation and function of the brain, eyes, liver, kidneys, and bone. They contain enzymes that break down toxic substances in the cells, including very long chain fatty acids and phytanic acid (a type of fat found in certain foods), and synthesize certain fatty materials (lipids) that are required for cell function. When peroxisomes are not functioning, there is over-accumulation of very long chain fatty acids and phytanic acid, and a lack of bile acids and plasmalogens--specialized lipids found in cell membranes and the myelin sheaths and encase and protect nerve fibers. IRD has some residual perixisome function, resulting in less severe disease than in Zellweger syndrome. Symptoms of IRD begin in infancy with retinitis pigmentosa, a visual impairment that often leads to blindness, and hearing problems that usually progress to deafness by early childhood. Other symptoms may include rapid, jerky eye movements (nystagmus); floppy muscle tone (hypotonia) and lack of muscle coordination (ataxia); mental and growth disabilities; abnormal facial features; enlarged liver; and white matter abnormalities of brain myelin. At the mildest extreme of the disorder, intellect may be preserved. Although Adult Refsum disease and IRD have similar names, they are separate disorders caused by different gene defects.