Manuscript Number: jgds-21-25301

Article Type: Short Communication

Received Date: January 09, 2021

Accepted Date: January 23, 2021

Published Date: January 30, 2021

Pancreatitis in Children

Janne Srujani*

Department of Biosciences, Osmania University, India

***Corresponding author:** Janne Srujani, Department of Biosciences, Osmania University, India, E-mail: srujanijanne9@gmail.com

1. Abstract

It is hard enough for an adult to manage a painful, chronic disease, but it proves even more difficult when a child faces such a disease. Pancreatitis is one of such conditions, which gives an unbearable burden to children and their families in all the aspects, as well as in terms of overall quality of life. For a child suffering from pancreatitis, all the aspects of life are affected, including the ability to be active, eat, and also going to school and participating in regular activities. But, as of now the treatments are currently limited to supportive therapy for pain management and also the surgical procedures. In a long run it was observed that pancreatitis in children is more common than was previously thought, and it can progress in a surprisingly short timeframe.

2. Keywords: Pediatric Pancreatitis, Pancreatectomy-islet auto transplantation, Pancreatic enzymes, Inflammation, Pancreatic cancer, Gallstones

3. Introduction

How pancreatitis affects children

Pancreatitis is a condition in which inflammation of the pancreas takes place, which is an organ located behind the stomach. Pancreas play a major role in the body, including the secretion of insulin and other key hormones, and also the production of a fluid that contains precursor forms of enzymes and bicarbonate that flows through ducts into the intestine, where the enzymes become activated and aid digestion of food. In the children affected with pancreatitis, the digestive enzymes become activated too early, while still inside the pancreas. This condition causes inflammation and damages the organ, which leads to symptoms of pancreatitis like abdominal pain which is often severe, and also nausea followed by vomiting.

Pancreatitis occurs in three forms: acute, acute recurrent (two or more acute episodes), and chronic. Acute pancreatitis can also progress to the chronic form, which leads to an increased risk of pancreatic cancer. After a considerable observation, it affects approximately 1 in 10,000 children. Chronic paediatric pancreatitis is a condition in which children usually have diagnostic or functional evidence of irreversible pancreatic damage [1].

In the case of acute recurrent and chronic forms of paediatric pancreatitis a significant burden on children and their caregivers is more than bearable. Risk factors for children suffering from pancreatitis differ compared to adults.

The main risk factors in children are inherited genetic variants, followed next by obstructed ducts caused by congenital abnormalities or gallstones. Whereas the risk factors in adults include genetics and gallstones, but there are also environmental factors such as alcohol and tobacco use which are the most predominant. It is observed that an insufficient production of pancreatic enzymes is found in both children and adults with pancreatitis. Emergency hospital visits and hospitalizations are common in both children and adults with the disease. Pain is another major one, whether it comes in discrete episodes or is constant, and it is frequently difficult to treat. Currently there are no drugs that effectively halt progression of this disease or that reverse the disease process. And there are very few treatment options to manage the severe, often unbearable pain typically accompanying chronic pancreatitis include opioids, which also carry the risk of addiction. In case if traditional pain management fails, a child suffering with pancreatitis may need a surgical procedure called a total pancreatectomy-islet autotransplantation (TP-IAT), in which the pancreas is surgically removed and its insulin-producing islet cells, which regulate blood glucose (sugar), are collected and infused into the liver, where the cells implant and function [2,3].

Early clues to pancreatitis development

The discovery of the first genetic mutation associated with this disease would occur more than 40 years later. It was identified that a number of genetic variants associated with pancreatitis in the trypsinogen gene, in more genes that affect trypsinogen/trypsin, and in genes with additional functions. Most of these discoveries were made possible by the availability of information on human gene sequences through such efforts as the NIH's Human Genome Project.

Clinical and genetic characteristics of hereditary pancreatitis that associated different PRSS1 mutations with age of symptom onset and disease progression, and it also showed a median age of 10 years for the onset of first symptoms of the disease in families with one of the mutations. These studies, together with a subsequent larger cohort study in advanced knowledge of the numerous genetic and environmental factors playing a role in pancreatitis, including the first genome-wide association study of pancreatitis in 2012, which identified new genetic regions associated with the disease.

The researchers will continue the long-term cohort study to probe deeper into remaining questions, such as better understanding risk factors involved in pancreatic disease progression, determining how chronic pancreatitis first develops, defining pancreatic enzyme insufficiency (a lack of digestive enzymes that hinders proper digestion of food), and also improving treatment options. One study is testing the first drug-free approach for paediatric pancreatitis, a web-based cognitive behavioural therapy intervention to manage pain without opioid exposure and improve quality of life in adolescents with chronic pancreatitis. The other researches that are going on are, monitoring rates across sites, identifying the earliest diagnostic imaging evidence of disease, defining metabolic and skeletal complications, understanding why chronic pancreatitis more commonly affects girls, and understanding the contribution of drug-induced pancreatic diseases. The recent development of the first pre-clinical mouse model to faithfully mimic human chronic pancreatitis, made possible through genetic alterations in the trypsinogen gene of mice, which can be used to inform the development of new treatments [4].

4. Conclusion

The on-going research is also focusing on ways to accelerate the development of new treatments for pancreatitis. Many recommendations were shared widely with the scientific community through multiple publications in the scientific literature. Most recently, in 2019, the NIDDK sponsored a workshop on how precision medicine-related methods and technologies can be applied to new and more personalized ways to diagnose and manage pancreatitis and other forms of pancreatic disease.

References

1. Ledder O, Duvoisin G, Lekar M, Lopez RN, Singh H, et al. (2020) Early Feeding in Acute Pancreatitis in Children: A Randomized Controlled Trial. Pediatrics 146: e20201149.
2. Nguyen THL, Yeung KA, Pugmire B, Gugig R (2020) Pancreatitis. Pediatrics in Review 41: 511-521.
3. Sellers ZM, MacIsaac D, Yu H, Dehghan M, Zhang K-Y, et al. (2018) Nationwide Trends in Acute and Chronic Pancreatitis Among Privately Insured Children and Non-Elderly Adults in the United States, 2007-2014. Gastroenterology 155: 469-478.
4. Story of Discovery: Pancreatitis in Children (2020) National Institute of Diabetes and Digestive and Kidney Diseases.