

Unusual presentation of Fibrocalculous pancreatic diabetes: A case report and brief review

Anil Roy¹, Arti Muley², Indravadan Patel³, Chintan Shah⁴

ABSTRACT

Introduction: Fibrocalculous pancreatic diabetes (FCPD) is a secondary form of diabetes. Patients present at an early age with abdominal pain and steatorrhea. They often develop diabetes before the age of 30 years and later nephropathy. FCPD is still a condition rarely considered in everyday practice. However, it might be more common than generally thought.

Case Report: We present a case of FCPD from Gujarat in west India, who presented with steatorrhea and abdominal pain. He also had unusual features of oral candidiasis and diabetic nephropathy at the time of diagnosis. He rapidly deteriorated and developed unexplained altered sensorium and succumbed to his illness within a few days of admission. **Conclusion:** Although the reported prevalence is low, the possibility of FCPD must be kept in mind while managing a case of diabetes as its therapy would include, in addition to control of diabetes, management of the pain of pancreatitis, long term pancreatic enzyme replacement and periodic screening for malignancy. We also observed a need for detailed research and treatment guidelines.

Keywords: Fibrocalculous pancreatic diabetes, nephropathy, oral candidiasis

¹Professor, ²Associate Professor, ^{3,4} Resident

Department of Medicine, SBKS MI and RC, Sumandeep Vidyapeeth, Piparia, Waghodia, Vadodara, Gujarat, India

Corresponding author mail: muleyarti40@gmail.com

INTRODUCTION

Fibrocalculous pancreatic diabetes (FCPD) is a secondary form of diabetes,

mostly seen in tropical regions.¹ Hence, it is sometimes referred to as TCP (tropical chronic pancreatitis). In the more recent

WHO classification of diabetes, FCPD is classified under 'diabetes due to other types'².

A low prevalence of about 0.5%-1.15% amongst all cases of diabetes mellitus was reported in North America in previous studies³. However, a prevalence of 5% - 10% among all diabetes mellitus cases in Western populations⁴ was reported recently. Studies from Southeast Asia reported a higher prevalence of approximately 15% - 20%⁵. The first case from India was reported by Kini in 1937⁶. Geevarghese, reported one of the largest series in the world from Kerala state in Southern India⁷. Large series of TCP patients have also been reported by a number of workers from various other states in India⁸⁻¹⁰. In the first population based study on prevalence of FCPD, the prevalence of FCPD was found to be 0.36% (1:276) of all self reported diabetes and 0.019% (1:5,200) of the general population of Chennai¹¹. However, there have been no reports from the western part of India especially Gujarat.

FCPD patients are reported to present at an early age with abdominal pain

and steatorrhoea and often develop diabetes before the age of 30 years. The prognosis was previously described as dismal, with most patients succumbing to the disease within a few years of diagnosis. However, a few later studies reported much better prognosis owing to improvement in socioeconomic status and standards of medical care. We present a case of FCPD from Gujarat in west India, who presented with unusual features of oral candidiasis and diabetic nephropathy at the time of diagnosis. He rapidly deteriorated and succumbed to his illness within a few days of admission.

CASE REPORT

Case presentation: A 37 years old male presented to medicine OPD with complaints of easy fatigability since two years, generalized weakness since two years, diarrhoea since 3-4 months, abdominal pain since two months and stomatitis since 15 days. Patient was relatively asymptomatic before two years when he started having easy fatigability and weakness. However, he did not seek any medical help for this. After about one and a half year, he developed

diarrhea with a frequency of 5-6 episodes/day. Stools were semi solid in consistency but not foul smelling and did not contain blood or mucus. He started having abdominal pain two months after the onset of diarrhea. It was a diffuse dull aching pain, not associated with nausea or vomiting. He developed stomatitis about 15 days prior to his presentation, that is, about four months after diarrhea. His relatives also gave a history of weight loss.

His past history was unremarkable with no history of diabetes, hypertension, tuberculosis, jaundice or any other major illness in the past or in his childhood. His family and personal history were also unremarkable except for the diarrhea that he had since four months.

Clinical examination: He was malnourished and had stomatitis and whitish plaques over palate and tongue. Apart from this, the general and systemic examination was unremarkable.

Laboratory investigations: His complete blood count was normal (Hemoglobin 13.9 gm/dl, TLC – 10,200/cu.mm, DLC –

80/13/3/4 and platelet count 2.45 lakh/cu.mm). He had raised blood sugar, detected for the first time; FBS was 154mg% and PP2BS was 340mg%. His urine RM, renal function test, liver function test and serum electrolytes, chest X Ray and ECG were all normal. HIV was negative. There were no ketones in urine. USG abdomen revealed mild ascites with foci of calcification in pancreas suggesting chronic pancreatitis with normal liver, gall bladder and spleen. His kidneys were enlarged, right kidney measuring 11.5 × 5.6 cms while left measuring 10.1 × 6.9 cms. Both kidneys were hyperechoic and bulky with a cortical thickness of 10mm.

In view of the above findings of diabetes in a young malnourished patient with no addiction and calcification in pancreas we made a diagnosis of fibrocalculous pancreatic diabetes.

Treatment and outcome: He was given insulin with intravenous fluids, antibiotics and antifungal medicine. Blood sugars were monitored regularly. With the treatment, his stomatitis and oral candidiasis resolved but other symptoms were not relieved. The

blood sugars remained grossly uncontrolled despite high doses of insulin, but he never developed ketosis. On the eighth day of admission he developed altered sensorium, although his vitals, lab reports, ECG, chest X ray, electrolytes and ABG were normal. He was conscious, moving all limbs and had no focal neurological deficit apart from altered sensorium. He deteriorated very fast after this, developed sudden breathlessness and was kept on ventilatory support but he was expired.

DISCUSSION

FCPD is a juvenile form of chronic calcific, non-alcoholic pancreatitis, prevalent almost exclusively in the developing countries of the tropical world. In India, these cases have mostly been reported from south India⁷, a few have also been reported from northern and eastern parts of India. However, to our knowledge, there has been no report from the western part of India especially Gujarat.

Protein-calorie malnutrition, consumption of cassava, other dietary toxins, oxidant stress hypothesis and trace element deficiency states were believed to

be important in its pathogenesis.^{1,12,13} However, several recent reports have questioned the relation of malnutrition and cassava ingestion with FCPD. Swai et al. did not find any significant difference in glucose tolerance or magnitude of DM between two rural populations, of which one had cassava as the staple food¹⁴. Previously, studies from certain regions of the world with very high frequencies of malnutrition like Ethiopia had also documented a relatively low frequency of FCPD¹⁵.

Genetic factors have been proposed as the most significant in the aetiology of FCPD. Recently, a link between the serine protease inhibitor, Kazal type 1 (SPINK 1) gene and TCP has been confirmed^{16,17}. It is a vital protease inhibitor that prevents unregulated or inappropriate activation of the pancreatic enzyme cascade by inhibiting trypsin activity which would eventually result into recurrent pancreatitis¹⁸.

The classical triad of presentation includes abdominal pain, steatorrhoea and diabetes. Abdominal pain is mostly the first predominant symptom to manifest ^{12,13}. The severity of pain tends to decrease and it

becomes less frequent as the disease progresses and usually disappears with onset of exocrine insufficiency and/or diabetes.^{1,19} After a few months to several decades, pancreatic calculi set in.¹³ Diabetes is an inevitable consequence of FCPD commonly occurring a decade or two after the first episode of abdominal pain.^{1,19} Demonstration of hyperglycemia and pancreatic calculi on plain abdominal X ray, abdominal computed tomography scan or ultrasound scan confirms the diagnosis as shown in the patient discussed²⁰.

Management: The basic principles of diet and exercise are the same as for the other types of diabetes except that a more liberal calorie and protein intake may be advised because of the associated undernutrition. Oral hypoglycemic agents may be useful in cases with mild diabetes and relatively early in the course of the disease. However, the majority of patients eventually need insulin. Pancreatic enzymes help to reduce steatorrhea and also improve quality of life.

The prognosis of FCPD was previously reported to be dismal^{10,21} but in the later studies, it was reported to have

improved^{8,12}. In an analysis of the survival time of a cohort of 370 FCPD patients, taking the date of first occurrence of abdominal pain and the time of onset of diabetes as the two reference points²², it was reported that about 80% of patients were alive 35 years after the first episode of abdominal pain and the mean survival time after the diagnosis of diabetes was 25 years. Majority of deaths were reported to be associated with diabetes related causes; diabetic nephropathy accounting for 40%. Severe infections, pancreatic cancer, and pancreatitis related causes also contributed to the mortality of FCPD patients.

We are discussing this case for two reasons. One, for its unusual presentation. Our case of FCPD comes from Gujarat in west India. To our knowledge, there has been no report of FCPD from this region of India. Although he had all the features suggestive of the disease, he had only four months history of abdominal pain and peculiarly had diabetes as well as renal parenchymal disease suggestive of diabetic nephropathy at the time of presentation. Such rapid progression of FCPD is quite unusual. Our patient also had oral

candidiasis at the time of diagnosis which has not been reported in any of the previous reports.

Second, to highlight the need of high index of suspicion for the disease as this case was seen in area from where it has not been reported previously and progressed very rapidly to develop altered sensorium and became fatal. It becomes more important as its therapy would include, in addition to control of diabetes, management of the pain of pancreatitis, long term pancreatic enzyme replacement and periodic screening for pancreatic adenocarcinoma^{1,23,24}. Delayed or misdiagnosis of the cases, inadequate diabetic medicines especially insulin, protracted micronutrient deficiencies and inability to adequately correct micro and macro nutrient deficiency are also other management challenges especially in developing countries.

CONCLUSION

FCPD is a type of secondary diabetes which has been studied less. There is a lack of large studies, thus creating a need of detailed research and treatment guidelines. It is an

important clinical entity which may have nephropathy with diabetes and pancreatic calculi at the time of first presentation and may progress rapidly to become fatal. Thus, although the reported prevalence is low, the possibility of FCPD must be kept in mind while managing a case of diabetes as its therapy would include, in addition to control of diabetes, management of the pain of pancreatitis, long term pancreatic enzyme replacement and periodic screening for malignancy.

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