

Update Synopsis

PANCREATIC DIABETES

G.R. Sridhar

An international collaborative study on malnutrition related diabetes was carried out¹ in Bangladesh, India, Indonesia, Thailand and Peru. The study demonstrated heterogeneity in presenting clinical features, exocrine pancreatic function and mode of therapy. It was contended that all groups showed under-nutrition, low body mass index, low calorie intake (<1800 cal/d), lack of ketosis despite no insulin therapy, and low normal C-peptide levels. Cassava consumption, pancreatic calcification or exocrine pancreatic dysfunction were not consistently found in all the groups.

This study demonstrates that undernutrition diabetes has features which are distinct from that of classic insulin dependent or non insulin dependent diabetes mellitus, although the exact etiology of undernutrition diabetes is not precisely known. The subgroups PDPD and FCPD in malnutrition related diabetes mellitus cannot be differentiated.

Pancreatitis was thought to be rare in India. But cases have been reported from different parts of the country-Baroda² (Gujarat), Bombay³ (Maharashtra), Jaipur⁴ (Rajasthan), Calcutta⁵ (W. Bengal), and Chandigarh⁶ (Punjab, Haryana). Diabetes resulting from pancreatic calcification is of course, well documented in Kerala⁷, Tamilnadu⁸, Karnataka⁹ and Orissa¹⁰.

Following the development of Gastroenterology as a speciality in India, work on different aspects of pancreatitis has contributed new information. The information is summarized in Table 1.

References :

1. Kristensen, S., Vuksua, V. (1985). Results of the International Malnutrition Related Diabetes Programme. IIIrd World symposium on Health Care for Diabetes in Developing Countries, Cardoba, Spain, September, 1985.
2. Shah M.M., Vyas B.K., Small W.P. (1969). Chronic relapsing pancreatitis-a clinical study of 15 cases. Indian J. Surgery 31 : 274-9.
3. Bhansali S.K. (1973). Surgery in pancreatitis. Indian J. Surg. 35 : 523-9.
4. Sharma G.C., Saxena O., Patricia Vickers (1973). Chronic pancreatitis-a review of 31 cases. Indian J. Surg. 35 : 158-63.
5. Chaudhury B., Urmila Khanna, Kalyan Banerjee, Sarkar A.K, (1981). Surgical management of chronic pancreatitis. Indian J. Surg. 43 : 621-9.

Table 1
Overview of Pancreatitis in India

S. No.	Author	Total No. of cases	Acute	Chronic	Etiology		Features		
					GB dis.	Alcohol Nutr.	Exoer. pancer.	Calcif. pancer.	Diab.
1.	Shah, M.M. et al ² (Baroda)	15	—	100%	30%	—	—	20%	72% 33%
2.	Sharma, G.C. et al ³ (Bombay)	31	—	100%	9.67%	3.22%	—	—	6.45% 3.22%
3.	Bhansali, S.K. (Jaipur) ⁴	73	60.27%	39.72%	12.0%	25%	—	0	— 0
4.	Chaudhury, B. et al ⁵ (Calcutta)	30	—	100%	53%	20%	—	—	23.33% 33%
5.	Kausak, S.P. et al ⁶ (Chandigarh)	256	70.31%	29.68%	—	—	—	18.4%	6.6%

6. Kaushik S.P., Vohra R., Verma R. (1983). Spectrum of pancreatitis at Chandigarh-a ten years experience. Indian J. Gastroenterology. 2(1) : 9-11.
7. Geevarghese P.J. (1968). Pancreatic Diabetes, Popular Prakasan, Bombay.
8. Viswanathan M., Krishnamoorthy M., Muhammed U., and Balachandran (1966). Diabetes in the young-a study of 166 cases. The Antiseptic 63 : 741-5.
9. Joglekar M.D., Desai S.G., Nagalotimath S.J. (1985). J. Scientific Society 12 : 83-7.
10. Tripathy B.B., Kar B.C. (1965). Observations on clinical patterns of diabetes mellitus in India. Diabetes, 14 : 404.

BIBLIOGRAPHY ON PANCREATIC DIABETES

Epidemiology & Clinical Features

1. Ramachandran, M., Mathew Roy, V.C. and John K.I. (1969). Pancreatic diabetes epidemiological and clinical observation. Proc. First Nat. Cong. Diab. Madras, Diabetic Association, India, p. 28.
2. Pai, K.N. and Ramachandran, M. (1974). Diabetes mellitus in endemic pancreatic syndromes of Kerala. In Disorders of Carbohydrate Metabolism (Ed.) Vinod Kumar, New Delhi, Arnold-Heinnmann, p. 139-I50.
3. Geevarghese, P.J. Pancreatic diabetes : (1968), A clinicopathological study of growth onset diabetes with pancreatic calculi, Bombay, Popular Prakashan.
4. Geevarghese, P.J., Pillai, V.K., Joseph, M.P. and Pitchumoni, C.S. (1962), The diagnosis of pancreatogenous diabetes mellitus. J. Assoc. Physicians of India 10, 173-180.
5. Ramachandran, M. (1970), Pancreatic diabetes-clinical and epidemiological observations. In Pancreatic diabetes, Eds. Pai K.N., Soman C.R. and Varghese. R. Geo Printers, Trivandrum, p. 16-27.
6. Joseph, P.P. (1965), Chronic pancreatitis with jaundice, pancreatic calcification and diabetes mellitus. J. Ind. Med. Ass. 44, 35-37.
7. Mahadevan, R. (1961), Pancreatic lithiasis, a follow up study of 17 cases. Brit. Med. J. 1, 626-629.
8. Madanagopalan, N. and Thiruvengadam, K.V. (1962), Pancreatic lithiasis. J. Ind. Med. Ass. 39, 339-343.
9. Barat. A.K. and Ganguly, R. (1964), Pancreatic lithiasis. Ind. J. Surgery 26 : 371377.

10. Sharma, G.C. and Harneja, R.R. (1964), Pancreatic lithiasis. Ind. J. Surg. 26, 460-465.
11. Elizabeth, T. and Stephen, P. M. (1954), Pancreatic calculi. J. Ind. Med. Assoc. 24, 126-128.
12. Chuttani, P.N. and Anand, S.S. (1957), Pancreatitis (a case study of 32 cases). J. Ass. Physicians. India 5, 184-190.
13. Vakil, B.J., Dagli, A.J. and Tambe, A.B. (1972), Chronic Pancreatitis in Western India. In Chronic pancreatitis-proceedings of the symposium held at Goa p. 7-16.
14. Chuttani, P.N. and Iyengar, P. (1972), Chronic pancreatitis in northern India. Chronic pancreatitis-proceedings of the symposium held at Goa p. ,17-21.
15. Narendranathan, M; (1981), Chronic calcific pancreatitis of the tropics. Tropical Gastroenterology 2(1), 40-45.
16. Rao, S.V., Chowdhutani, C.P.D. and Satyanarayana, S. (1966), Pancreatic calculi and diabetes. In 'Diabetics in the tropics'. Ed. J.C. Patel and N.G. Talwalkar Diabetic Association of India, Bombay 234-238.
17. Moses, S.G.P. and Kannan, V. (1976), The clinical profile of undernourished diabetes aged 30 or less with associated complications in Madras, India. In : Diabetes Mellitus in Asia (Ed.), S. Baba, Y. Goto and I. Fukui. Excerpta Medica Amsterdam 259-262.
18. Warrier, C.B.C. (1966), Clinical aspects of pancreatic diabetes in Calicut. In Diabetes in the Tropics. (Ed). Patel, J.C. & Talwalkar. N.G. Diabetic Association of India, Bombay p. 259.
19. Viswanathan, M., Krishnamurthy, M. and Krishnaswami, C.V. (1969), Diabetes in the young, occurring in the low income group in Madras. In Proceedings of the First National Congress of Diabetes, Madras, India (Ed). M. Viswanathan and C.V. Krishnaswami. Diabetic Association of India, Madras Branch, Madras 21-27.
20. Viswanathan, M., Sampath, K S., Sarada, S. and Krishnaswami, C.V. (1973), Etiological and clinical angle of pancreatic diabetes from Madras. J. Assoc. Physicians India 21, 753-759.
21. Nagalothimath, S.J., Dabar, R.O., Joglekar, M.D. and Desai, S.G. (1976), Pathology of the pancreas in calcareous pancreatitis with Diabetes. Post IX IDF Congress satellite symposium on pancreatic diabetes, Madras, Nov.
22. Tripathy, B.B. and Samal, K.C. (1981), Diabetes in the young. Journal Diab. Assoc. India 21, 23-34.
23. Ahuja, M.M.S , Talwar, G.P., Varma, V.M., Kumar, A. (1965), Diabetes mellitus in young Indians. Indian J. Med. Res. 53, 1139-1140.

24. Acharya, S.K., Mishra, P.K. (1984), Chronic calcific pancreatitis of the tropics. *Tropical Gastroenterology* 5(3), 124-134.
25. Viswanathan, M., Mohammad, U., Krishnamurthy, M., Balachandran, P.K. (1966). Diabetes in the young-a study of 166 cases. *The Antiseptic*, 63, 741-745.
26. Kar, B.C., Tripathy, B.B. (1965). Observations of type 'J' diabetes. *J. Assoc. Physicians India*. 13 : 181-187.
27. Joglekar M.D., Desai S.C., Nagalotimath S.J. (1985) Pancreatic Diabetes in North Karnatak. *J. of the Scientific Society*-12, 83-87.
28. Vaishnawa H, Bhasin E.C., Gulati P.D., Bhaskar Rao, Rizci S. N.A., Singh, Verma M.P., Hagroo A.A. (1974). Diabetes mellitus with onset under 40 years in North India. *J. Assoc. Physic. India* 22 : 878.

Etiology and Pathology :

1. Geevarghese, P.G. Pitchumoni, C.S. and Ramachandran, Nair, S. (1969). Is protein calorie malnutrition an initiating cause of pancreatic calcification? *J. Assoc. Phys. India* 17 : 417-419.
2. Pitchumoni, C.S., (1973), Pancreas in primary malnutrition disorders. *Amer. J. Clin. Nutr.* 26, 374-6.
3. Nwokolo C. and Oli, J. (1980), Pathogenesis of juvenile pancreatitis syndrome. *Lancet* 1 : 456-458.
4. P.G. Geevarghese (1977), Pancreatic Diabetes : I. Aetiopathogenesis. In *Diabetes Mellitus* (Ed). M. Bhaskar Rao (Pub.) RSSDI and Arnold Heinemann page 234-238.
5. Viswanathan, M., Sampath, K.S., Sarada, S. and Krishnaswami, C.V. (1973). Etiopathologic and clinical angle of pancreatic diabetes from Madras. *J. Assoc. Physicians India*, 21, 753.
6. Pandit, J. C. and Irani, R.A. (1968). Acute pancreatitis due to obstruction of pancreatic duct by a round worm. *Ind. J. Surg.* 30 : 257.
7. Shaper, A.G. (1964). Aetiology of chronic pancreatic fibrosis with calcification seen in Uganda. *Brit. Med. J.* 1 : 1607-1608.
8. Ratnaike, V.T. and Rajasuriya, K. (1963). Pancreatic calcification related to protein malnutrition. *Trop. Geogr. Med.* 15 : 1-6.
9. Nagalotimath, S.J., Dabar, R.O., Joglekar, M.D. and Desai S.G. Pathology of the pancreas in calcareous pancreatitis with Diabetes. Post IX I.D.F. Congress satellite symposium on Pancreatic Diabetes. Madras, Nov. 1976.

10. Mc Millan, D.E. and Geevarghese, P.J. Cyanide ingestion as a potential etiological factor in pancreatic diabetes. Post IX IDF Congress Satellite symposium on Pancreatic Diabetes, Madras, Nov. 1976.
11. Dilawari, J.B. (1981). What is the cause of Afro-Asian pancreatitis? Selected summary review. Tropical Gastroenterology. 2 : 62.
12. Nagalotimath S.J. (1980). Pancreatic pathology in pancreatic calcification with diabetes. In Secondary diabetes : The spectrum of the Diabetic Syndrome (Ed.). S. Podolsky and M. Viswanathan. Raven Press, New York, p. 118-145.
13. Ramachandran, P., Saraswati, B., Ramachandran, M., Thangavelu, M. (1969). Endemic pancreatic syndrome of Kerala, Aetiopathology. Ind. J. Med. Res. 57 : 2075-2082.
14. Mc Millan, B.E., Geeverghese, P.J. (1980) : Dietary cyanide and tropical malnutrition diabetes. In Secondary Diabetes (Ed). S. Podolosky and M. Viswanathan, Raven Press, New York, p. 239-247.
15. Varghese, P.J. George K.P. and Geevarghese, P.J. (1976). Tapioca consumption and the ability to smell cyanide in patients with pancreatic diabetes. Post IX IDF Congress Satellite symposium on pancreatic diabetes: Madras, Nov. 1976.
16. Baby Saraswathy K. (1968). Chronic relapsing pancreatitis with calculi-pathological aspects. University of Kerala.
17. Alappat J.L., Ananthachari M.D. (1967). A preliminary study of the structure and function of the enlarged parotid glands in chronic relapsing pancreatitis. Gut 8 : 42-45.

Complications

1. Mathew Roy V.C., Ramachandran M, and John K.I. (1969). Neurological complications in Pancreatic Diabetes. Proc. First Nat. Cong. Diabetes. Diabetic Ass. India, Madras. p. 283.
2. Roy Verghese, Ramachandran M, Ramachandran P and Rai K.N. (1969). Microangiopathy in pancreatic diabetes. Proc. First Nat. Cong. Diabetes. Diabetic Ass. India, Madras, p 297.

Management

1. Abraham P. A. (1970) Surgical management of patients with chronic pancreatitis and pancreatic calculi. Proc. symp. Pancreatic Diabetes, Medical College, Trivandrum.
2. Mathew Varughese (1980) Surgery in Pancreatic Diabetes. In Secondary Diabetes : The spectrum of the Diabetic Syndromes. (Ed) Podolsky S and Viswanathan M. Raven Press, New York. p. 231-237.