DIABETES AND GASTROINTESTINAL TRACT

Pages with reference to book, From 220 To 221

The impairment of gastrointestinal function in chronic diabetes (Katz and Spiro, 1966; Goyal and Spiro, 1971) and acute Ketoacidosis (Bearwood, 1935) may be due to autonomic neuropathy (Rundles, 1945), microangiopathy (Ang-ervall and Save-Soderbergh, 1966), changes in insulin and glucagon release and acute metabolic disturbances (Scarpello and Sladen, 1978).

Acute manifestations like anorexia, nausea and vomiting in diabetic Ketoacidosis are attributed to gastric stasis. Gastric atony may be due to glucagon and insulin release (Aylett, 1962; Herrera et al., 1967), reversible autonomic disturbances (Scott and Lloyd-Mostyn, 1976), intracellular hypokalemia due to electrolyte changes in Ketoacidosis and sudden stress in recent onset diabetes (Howland and Drinkard, 1963).

Haematemesis in diabetics is secondary to erosive gastritis which results from increased concentration of urea in the retained gastric fluid (Devonport, 1968).

Acute abdominal pain with leucocytosis and raised amylase (Beardwood, 1935; Alberti and Hockaday, 1977; Knight et al., 1973) also occurs in these patients. Persistant abdominal pain may also occur as a result of diabetic radiculopathy (Longstreth and Neweomer, 1977).

Autonomic neuropathy affects the oesophagus and manifests as dysphagia, diffuse oesophageal ulceration and diminished or absent oesophageal peristalsis (Vinson and Wilder, 1933; Mandelstam and Leiber, 1967).

Atrophic gastritis is more frequent in diabetics than in the age matched controls (Katz and Spiro, 1966' Angervall et al., 1962). It results in diminished gastric secretion (Angervall et al., 1961) and an increased incidence of pernicious anaemia (Arapakis et al., 1963). Gastric parietal cell antibodies have also been frequently encountered in Diabetics (Moore and Neilson, 1963). Incidence of duodenal ulcer appears to be low in patients with diabetes (Wood, 1947; Dotevall, 1959).

Visceral neuropathy affecting the small bowel results in diarrhoea of diabetes and Steatorrhoea (Bargen et al., 1936; Wruble and Kaiser, 1964) without any histological changes in small intestinal mucosa.

It appears that autonomic neuropathy diminishes the small bowel transit resulting in the development of bacterial overgrowth and thus deconjugation of bileacids and diarrhoea. Diarrhoea in these patients responds to antibiotics (Gren et al., 1968). Diabetics in whom bile acid deconjugation does not occur are treated with cholinergic drug (Vinnik et al., 1962) and Sympathomimetic agents (Malins and French, 1957) with variable results.

Severe constipation (Rundles 1945; Mayne, 1965) and colonic dilatation with faecal impaction (Paley, 1961) may be due to colonic neuropathy.

Gastrointestinal manifestations of diabetes may be due to visceral neuropathy or transient hormonal and metabolic disturbances (Scarpello and Sladen, 1978).

References

1. Alberti, K.G.M.M., and Hockaday, T.D.R. (1977). Diabetic coma; a reappraisal after 5 years. Clin. Edocrin. Metab., 6:421.

2. Angervall, L., and Save-Soderbergh, J. (1966) Microangiopathy in the digestive tract in subjects with diabetes of early onset and long duration. Diabetalogia, 2:117.

3. Angervall, L., Dotevall, G., Fagerberg, S.E. and Lehmann, K.E. (1962) Gastric mucosa in patients with diabetes of early onset. Acta Path. et. Microbiol. Scand. Suppl., 154:108.

4. Angervall, L., Dotevall, G., and Lehmann, K.E. (1961) The gastric mucosa in diabetes mellitus: Functional and histopathological study. Acta. Med. Scand., 169:339.

5. Aapakis, G., Dock, O.A.A., Williams, D.L., and Witts. L.J. (1963) Diabetes mellitus and pernicious anaemia. Br. Med. J., 1:159.
6. Aylett, P. (1962) Gastric emptying and changes of blood glucose level as affected by glucagon and insulin. Clin. Sc., 22:171.
7. Bargen, J.A., Bollman, J.L., and Kepler, E.J. (1936) The "diarrhoea of diabetes" and steatorrhoea of pancreatic insufficiency. Proc. Mayo Clin., 11:737.
8. Beardwood, J.T. Jr. (1935) The abdominal symptomatology of diabetic acidosis. JAMA., 105:1168.
9. Devonport, H.W. (1968) Destruction of the gastric mucosal harrier by detergents and urea. Gastro-enterology, 54:175.
10. Dotevall, G. (1959) Incidence of Peptic ulcer in diabetes mellitus. Acta Med. Scand., 164:463.
11. Green, P.A., Berge, K.G., and Sprague, R.G. (1968) Control of diabetic diarrhoea with antibiotic therapy. Diabetes, 17:385.
12. Goyal, R.K., and Spiro, H.M. (1971) Gastrointestinal manifestations of diabetes mellitus. Med. Clin. N. Amer., 55:1031.
13. Herrero, F., Kemp, D.R., Tsukamoto, M., and Eisenberg, M.M. (1967) Insulin inhibition of gastric secretion and motility. The potassium reversed effect. Surg. Forum, 18:300.
14. Howland, W.J., and Drinkard, R.U. (1963) Acute diabetic gastric atony. JAMA., 185:214.
15. Katz, L.A., and spiro, H.M. (1966) Gastrointestinal manifestations of diabetes. N. Engl. J. Med., 275:1350.
16. Knight, A.H., Williams, D.N., Ellis, G., and Goldberg, D.M. (1973) Significance of hyperamylasaemia and abdominal pain in diabetic ketoacidosis. Br. Med. J., 49:90.
17. Longstreth, G.F., and Newcomer, A.D. (1977) Abdominal pain caused by diabetic radiculopathy. Ann. Intern. Med., 86:166.
18. Malins, J.M., and French, J.M. (1957)., Diabetic diarrhoea. Quart. J. Med., 26:467.
19. Mandelstam, P., and Leiber, A. (1967) Esophageal dysfunction in diabetic neuropathy-gastroenterology: Clinical and roentgenological manifestations. JAMA., 201:582.
20. Mayne, N.M. (1955) Neuropathy in the diabetes and non diabetic populations. Lancet, 2:1313.
21. Moore, J.M., and Neilson, J. (1963) Antibodies to gastric mucosa and thyroid in diabetes mellitus. Lancet, 2:645.
22. Paley, R.G., Mitchell, W., and Watkinson, G. (1961) Terminal colonic dilatation following intractable diarrhoea in a diabetic. Gastroenterology, 41:401.
23. Rundles, R.W. (1945) Diabetic neuropathy; general review with report of 125 cases. Medicine, 24:111.
24. Scarpello, J.H.B., and Sladen, G.E. (1978) Diabetes and the Gut. Gut, 19:1153.
25. Scott, J., and Lloyd-Mostyn, R.H. (1976) Acute autonomic dysfunction in diabetic ketoacidosis. Lancet, 1:590.
26. Vinson, P.P., and Wilder, R.M. (1933) Diffuse ulceration of the esophagus and trachea associated with diabetes melliuts. Arch. Intern. Med., 52:541.
27. Vinnik, I.E., Kern, F. Jr., and Struther, J.E. Jr. (1962) Malabsorption and the diarrhoea of diabetes mellitus. Gastroenterology, 43:507.
28. Wood, M.N. (1947) Chronic peptic ulcer in 94 diabetics. Am. J. Dig. Dis., 14:1.
29. Wruble, L.D., and Kaiser, M.H. (1964) Diabetic steator-rhoea: A distinct entity. Am. J. Med., 37:118.