

Incidental ^{67}Ga uptake into an appendiceal mucocele in a patient with sigmoid colon cancer

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We report a case of sigmoid colon cancer in which visualization of an appendiceal mucocele was unexpectedly found during ^{67}Ga scintigraphy, and discuss a proposed mechanism of uptake.

Key words: ^{67}Ga scintigraphy, appendiceal mucocele, colon cancer

INTRODUCTION

THE CLINICAL USEFULNESS of ^{67}Ga scintigraphy for colorectal carcinoma has been reappraised.¹

We report a case of sigmoid colon cancer in which unexpected visualization of appendiceal mucocele was found during ^{67}Ga scintigraphy.

CASE REPORT

A 78-year-old woman with severe coronary artery disease was found to be anemic and stools were positive for occult blood. Barium enema showed serration in the sigmoid colon with contraction of the lumen. The proximal portion of the appendix was filled with barium (Fig. 1). The patient's general appearance was not good. Scintigraphy was performed 48 hours after intravenous injection of 74 MBq of ^{67}Ga -citrate with bowel preparation (dietary restriction and laxatives). A scintigram showed an abnormal hot spot in the right lower quadrant of the abdomen (Fig. 2). Scintigraphy performed again 6 hours later to distinguish physiological ^{67}Ga uptake showed that the hot spot was in the same position. On CT plain scan, a perityphlic oval cystic lesion with small calcification of the wall was recognized (Fig. 3).

The patient underwent coronary artery bypass surgery and laparotomy, which revealed sigmoid colon cancer (well-differentiated adenocarcinoma, 5 × 7 cm) and

mucocele (mucinous cystadenoma, 8 × 3.5 cm) which arose in the distal portion of the appendix (Fig. 4). Colloidal iron stain of the mucocele showed intense staining of mucus and mucosal cells, but no evidence of inflammation was recognized.

DISCUSSION

Mucocele of the appendix is not common. The incidence in appendectomy specimens is about 0.25%. Histologically mucocèles have been classified into three groups: (1) focal or diffuse hyperplasia, (2) mucinous cystadenoma, (3) mucinous cystadenocarcinoma, and only mucinous cystadenocarcinoma is considered to have malignant potential.² The significant association of mucocele with colonic tumors is recognized (21.4%, and one-third of these patients had more than one colonic neoplasm).³ Preoperative diagnosis is not easy. The usefulness of CT and ultrasonography has been reported.⁴ The literature on the ^{67}Ga scintigraphy of appendiceal mucocele is not extensive.⁵

In the present case, ^{67}Ga scintigraphy was applied for the evaluation of a sigmoid lesion. No definite uptake into the sigmoid colon cancer was seen, but unexpected visualization of appendiceal mucocele was recognized.

Concerning the mechanism of uptake, acid mucopolysaccharide, the predominant component of epithelial mucus, is stained by the colloidal iron technique and the positive colloidal iron staining in the present case showed affinity of the ferric ion for the acid mucopolysaccharide moiety of the mucus and mucosal cells. ^{67}Ga resembles trivalent ferric ion. It is proposed that the acid mucopolysaccharide component of the mucus within the lumen and lining cells accounts for the uptake of ^{67}Ga ion, in a

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similar manner to the uptake of its analogue, the ferric ion.^{5,6} Colloidal iron stain of this colon cancer was not positive. This case suggested that acid mucopolysaccharide played an important role in ^{67}Ga uptake.

In conclusion, this case showed the need to consider appendiceal mucocele in the differential diagnosis of ^{67}Ga uptake in the right lower quadrant of the abdomen.

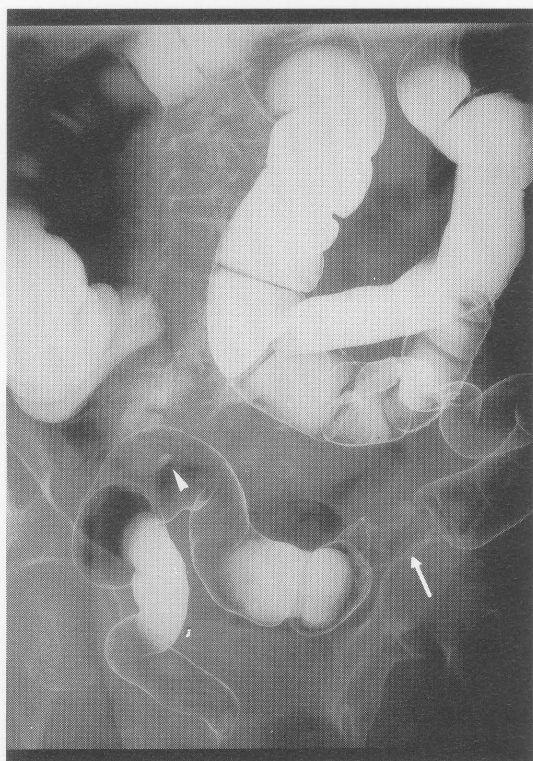


Fig. 1 Barium enema showed serration in the sigmoid colon with contraction of the lumen (arrow). The proximal portion of appendix was filled with barium (arrow head).

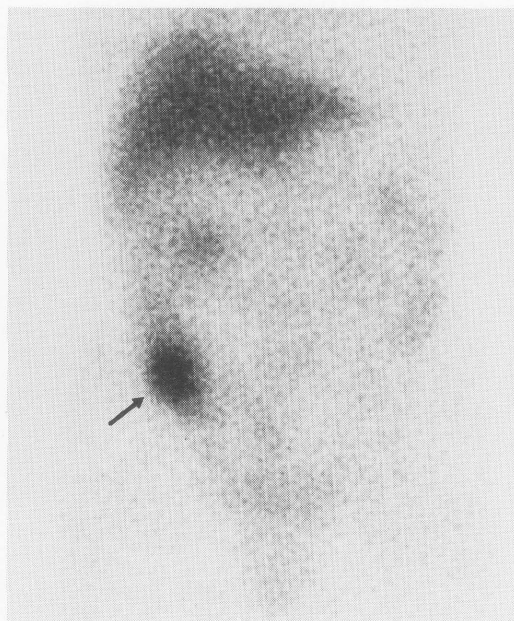


Fig. 2 ^{67}Ga scintigraphy showed abnormal hot spot in the right lower quadrant of the abdomen (arrow).

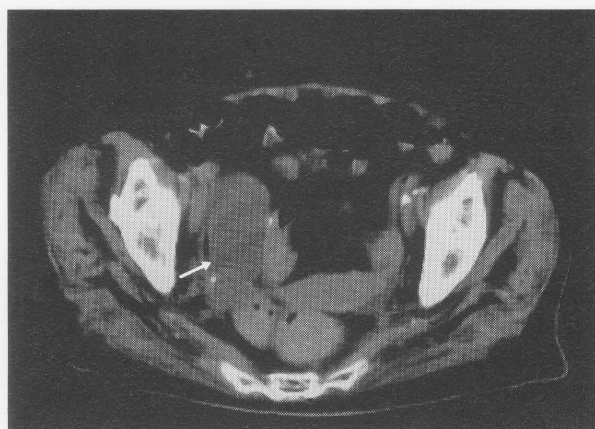


Fig. 3 CT plain scan showed perityphlic oval cystic lesion with small calcification of the wall (arrow).

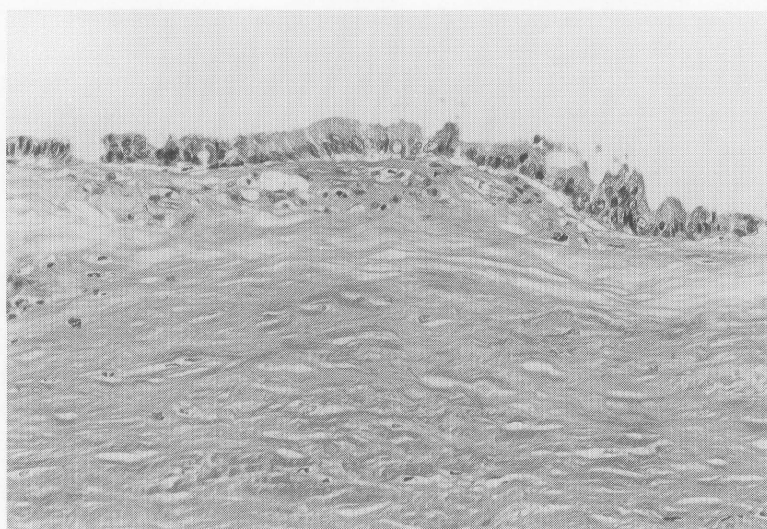


Fig. 4 Histopathology showed mucinous cystadenoma (H & E stain).

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REFERENCES

1. Sumi Y, Ozaki Y, Amemiya K, Shirakata A, Tamamoto F, Katayama H. Re-appraisal of clinical usefulness of ^{67}Ga -citrate scintigraphy for primary colorectal carcinoma: with evaluation of scintigram obtained from resected specimen. *Ann Nucl Med* 6: 137–145, 1992.
2. Higa E, Rosai J, Pizzimbono CA, Wise L. Mucosal hyperplasia, mucinous cystadenoma, and mucinous cystadenocarcinoma of the appendix: a reevaluation of appendiceal "mucocele." *Cancer* 32: 1525–1541, 1973.
3. Wolff M, Ahmed N. Epithelial neoplasms of the vermiform appendix (exclusive of calcinoid). II. Cystadenomas, papillary adenomas, and adenomatous polyps of the appendix. *Cancer* 37: 2511–2522, 1976.
4. Horgan JG, Chow PP, Richter JO, Rosenfield AT, Taylor KJW. CT and sonography in the recognition of mucocele of the appendix. *AJR* 143: 959–962, 1984.
5. Alpert L, Friedman R. Gallium scintigraphy demonstration of an appendiceal mucocele: a proposed mechanism of uptake. *Clin Nucl Med* 6: 378–379, 1981.
6. Ando A, Ando I, Takeshita M, Hiraki T, Hisada K. Subcellular distribution of gallium-67 in tumor and liver. *Int J Nucl Med Biol* 9: 65–69, 1982.