

Traumatic Neuroma of the Gallbladder — Report of a Case

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ABSTRACT. A case of traumatic neuroma of the gallbladder is reported. Most of traumatic neuromas of the biliary system arise at the cystic duct stump after cholecystectomy. Review of the English literature disclosed only one case of traumatic neuroma of the gallbladder. The reported case had a history of unsuccessful cholecystectomy performed twenty years previously. In our case, in contrast, traumatic neuroma developed without a history of previous operation. Prolonged presence of cholecystoduodenal fistula was suspected as an etiological factor.

Key words : Traumatic neuroma — Gallbladder

Traumatic neuroma is an exuberant but non-neoplastic proliferation of a nerve occurring in response to injury.^{1,2)} The disorganized proliferation of the severed nerve arises at its proximal end. Traumatic neuromas are usually a result of surgery, notably amputation, being therefore referred to as amputation neuroma as well. Theoretically, traumatic neuroma may develop in any organs or tissues where nerve bundles exist, and the biliary system is not an exception.³⁻⁵⁾

Recently we have experienced a case of traumatic neuroma arising in a gallbladder. Review of the English literature disclosed only one such case in the gallbladder,⁶⁾ although several cases appeared in the cystic duct stump after cholecystectomy. The reported case with traumatic neuroma in the gallbladder had a history of unsuccessful cholecystectomy performed twenty years previously. In our case, however, a history of previous operation was lacking.

Herein, we report the second case of traumatic neuroma of the gallbladder and discuss a possible pathogenetic mechanism.

REPORT OF A CASE

A 61-year-old female was admitted to the Kawasaki Medical School Hospital for surgical treatment of cholelithiasis on May 22, 1985. She had a history of cholelithiasis thirty years ago, but did not receive any surgical procedure in and around biliary system. She had been well until one year earlier, when she had experienced general fatigue and anorexia. She visited

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Fig. 1. X-ray film of the abdomen. An air cholangiogram is clearly observed.

our hospital and was pointed out to have gastritis and cholelithiasis with cholecystoduodenal fistula. During the next ten months she had been followed at out-patient clinic. Two months before entry, she experienced epigastric pain with radiation to the right shoulder. She had no pyrexia, nausea or vomiting. X-ray examination of the abdomen revealed air cholangiogram (Fig. 1). An upper gastrointestinal series and an ultrasound examination again revealed cholelithiasis with cholecystoduodenal fistula (Fig. 2). She was admitted to our hospital for the operation.

On admission, the body temperature was 35.9°C. The pulse was 85/min, and the blood pressure was 130/70 mmHg. She was 145 cm tall, and weighed 35.0 kg. The lungs were clear, and the heart was normal; no murmur was heard. Abdomen was flat and soft. There was no tenderness. The liver and the spleen were not felt. A movable soft mass palpated above the navel was interpreted as a small intestine. Neurological examinations were negative. The urine was normal. The hematocrit was 43.3%; the white cell count 11,700/mm³ with 40% band form, 43% segmented form, 16% lymphocyte, and the platelet count 202,000/mm³. Other laboratory examinations revealed



Fig. 2. Spot film of the duodenum from upper gastrointestinal series, demonstrating a leakage of radiopaque material from the duodenum to the gallbladder. Note the radiopaque material in common bile duct.

no abnormalities.

On the 13th hospital day, cholecystectomy with a closure of the fistula was performed. The gallbladder was atrophic and tightly adherent to the liver and the duodenum. Fistula existed between the fundus of the gallbladder and the posterior wall of the duodenum. There were no gallstones.

PATHOLOGICAL FINDINGS

The resected gallbladder was atrophic and measured 3.5×2.5 cm in greatest dimension. There was no gallstones. The wall of the gallbladder was thickened to 6 mm. The mucosal surface had lost its normal network appearance and was generally smooth but focally polypoid. An orifice of the fistula was present in the fundic portion and measured approximately 1 mm in diameter. Several minute white nodules were scattered in the fundus and the majority of them were confined to the vicinity of the fistular orifice (Fig. 3). The

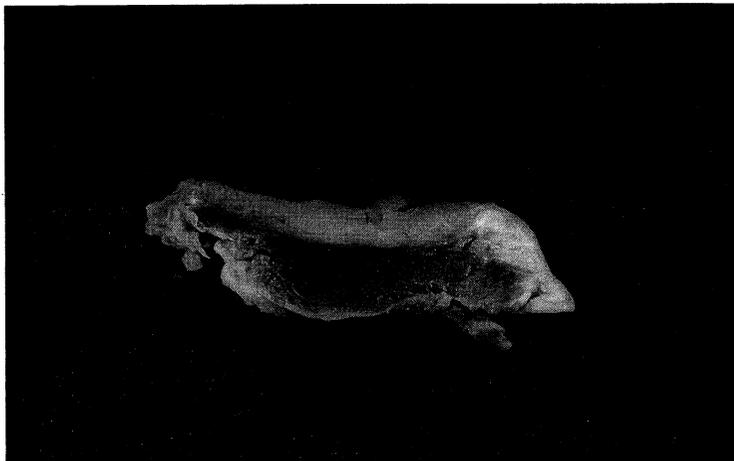


Fig. 3. The cut surface of the gallbladder, showing minute white nodules in the wall.

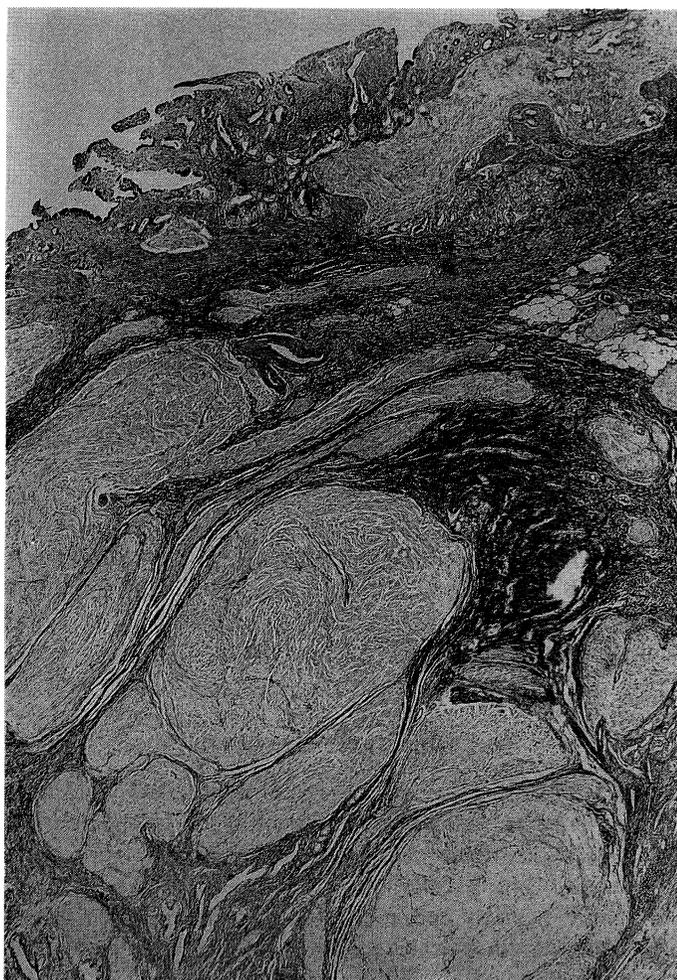


Fig. 4. Microscopic appearance of the traumatic neuroma. The nodules of disorganized nerve fascicles are scattered. (H-E $\times 20$)

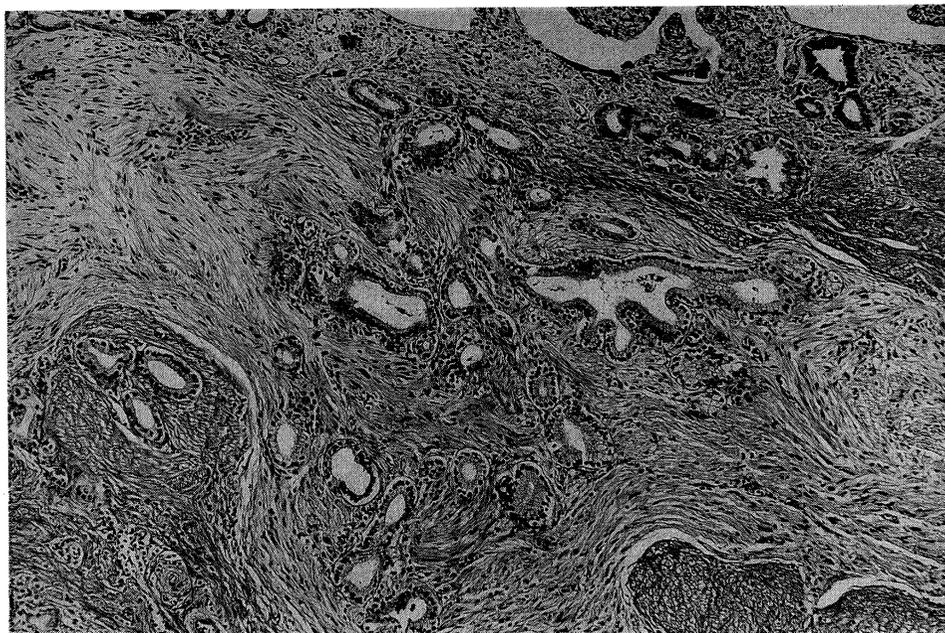


Fig. 5. An intermingling of traumatic neuroma and the glands. The glandular epithelium shows no atypism. (H-E $\times 100$)

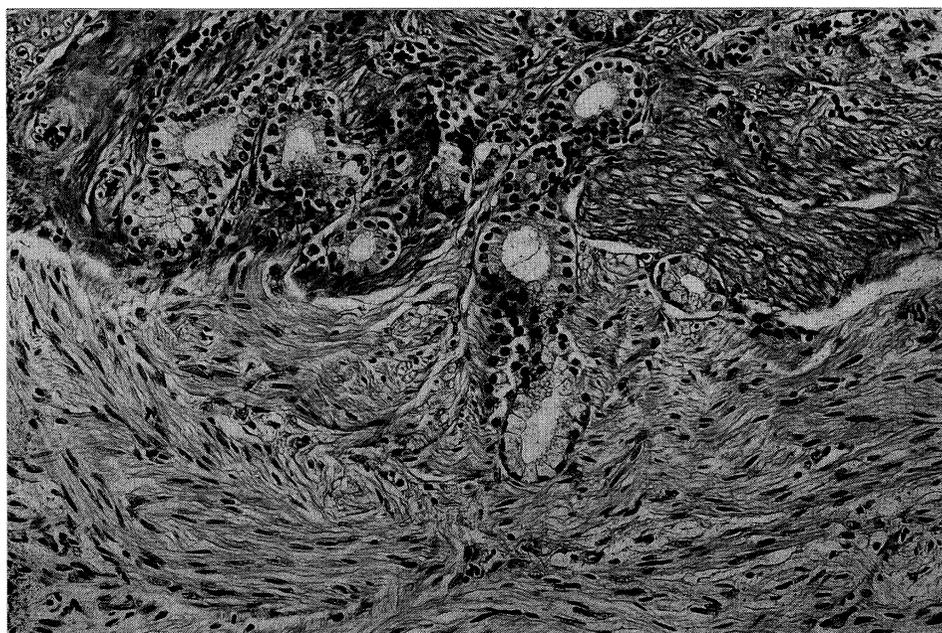


Fig. 6. The glands are present in perineural region. It may impart a false impression of perineural invasion by adenocarcinoma. (H-E $\times 200$)



Fig. 7. Microscopic appearance of the fistular tract. Inner surface of the fistula is covered by the epithelium and traumatic neuroma exists in the vicinity. (H-E $\times 24$)

serosal surface was covered by dense connective tissue.

Microscopically, a mucosal surface was lined by a single layer of the columnar epithelium. On occasion, the epithelium grew in the papillary fashion with fibrovascular stroma. Glandular component increased in number and was seen in the lamina propria as well as the muscle layer. The lamina propria was infiltrated by a moderate number of lymphocytes and plasma cells. The muscle layer was either hyperplastic or atrophic and traversed by numerous Rokitansky-Aschoff sinuses. In the muscle layer and subserosa, multiple nodules consisting of haphazardly arranged nerve fascicles were scattered. It was considered to be consistent with neuroma (Fig. 4). The nodules were round, oval or irregularly shaped, varied in size and surrounded by the collagenous tissue and/or smooth muscles. Occasionally the nerve fascicles and the glands intermingled, which may give a false impression of a neural invasion of adeno-

carcinoma (Figs. 5, 6). The fistula appeared like an intramural diverticulum covered by the columnar epithelia (Fig. 7), but it communicated with the duodenum. A fistular tract was surrounded by a dense connective tissue with minimal inflammatory cell infiltrates and the larger neuroma nodules were concentrated in this area.

DISCUSSION

Traumatic (amputation) neuromas are the trauma-initiated proliferation of the axon-Schwann cell unit.^{1,2)} When the axon of the proximal cut end of the nerve fails to fuse corresponding part of the distal stump, traumatic neuromas develop. A direct connection between neuroma and adjacent nerves may be found. They form circumscribed, gray-white, and rubbery firm nodules. Histologically, traumatic neuromas consist of a haphazard proliferation of nerve fascicles enveloped by the collagen. Our case revealed histologic features identical to this in general. In addition, it is of interest that proliferating nerve fascicles were in very close association to or actually intermingled with the glands of the gallbladder. Such an appearance may be mistaken as a perineural invasion of adenocarcinoma, but it can be differentiated from carcinomas by the non-atypical appearance of the glandular epithelium.

Traumatic neuromas rarely arise in the biliary tract,³⁻⁵⁾ just as they rarely occur elsewhere in the body. They almost invariably develop after a biliary tract surgery (cholecystectomy), and most frequently at the cystic duct stump. Review of the English literature disclosed only one case of traumatic neuroma arising in the gallbladder.⁶⁾ All the cases reported so far had a history of previous surgery. But no previous surgical intervention has been made in our case. Therefore, etiological factors other than operation should be sought in our case. Occasionally, a mild proliferation of nerve fascicles may be seen around the base of chronic gastric ulcer.⁷⁾ Traumatic neuroma in the stomach after gastric ulcer is also described.⁸⁾ These phenomenon might have resulted from an injury of the nerve due to the ulcer. In our case cholelithiasis has been found thirty years ago and cholecystoduodenal fistula has been known to exist for the past one year. Nodules of traumatic neuroma were confined mainly to the fistular orifice in the fundus of the gallbladder. These altogether tempt us to believe that traumatic neuroma may have resulted from injury and reparative proliferation of the nerves by a mechanism similar to those arising in chronic gastric ulcer cases.

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