Granular cell tumour of the ampulla of Vater

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ABSTRACT

Granular cell tumour (GCT) is a rare soft tissue neoplasm commonly encountered in the head and neck region, skin and subcutaneous tissue. GCT of the biliary system is most commonly reported in African-American females and usually presents as abdominal pain and obstructive jaundice. The neoplasm constitutes less than 10% of all benign tumours of the extra-hepatic biliary tree. No case of GCT involving the ampulla of Vater has been reported in the literature to date. We report a case of benign GCT involving the ampullary region in a 44-year-old Ethiopian male. Preoperative diagnosis was available on ERCP and deep biopsy. The patient was managed by debulking resection and biliary-enteric bypass and is symptom-free with no evidence of tumour progression after a follow-up of one year.

Granular cell tumour (GCT) is a rare soft tissue neoplasm usually occurring in the tongue, oral cavity, skin and subcutaneous tissues, although various other sites have been reported.1,2 Less than 1% of GCTs involve the extra-hepatic biliary tract.3 The tumour may occur concomitantly with calculous biliary disease and clinically mimics various benign biliary disorders.1,3 To the best of our knowledge no case of isolated ampullary GCT has yet been reported in the English literature. We report a case of GCT of ampullary origin presenting with abdominal pain, weight loss and obstructive jaundice.

Case History

A 44-year-old diabetic Ethiopian male presented with progressive jaundice, upper abdominal pain, anorexia and loss of weight over past 12 months. During this one-year period the patient underwent ultrasonography that demonstrated the presence of mild intra- and extra-hepatic ductal dilatation and, ERCP that revealed the presence of a submucoal ampullary tumour. The tumour was biopsied and a biliary stent was put to relieve obstruction. The histopathological examination of the tumour was reported to have demonstrated chronic non-specific inflammation. After an initial improvement, the patient complained of recurrent symptoms and loss of weight ten months following stent placement. Repeat ERCP revealed an increase in the size of the ampullary growth, blocked biliary stent and associated ductal calculi. The stent was removed and papillotomy and extraction of ductal calculi was followed by brush cytology and repeat biopsies. The brush cytology was negative for malignancy and histopathological examination showed presence of chronic non-specific inflammation. He was subsequently referred for surgical management. Upon admission, the patient had jaundice and deep tenderness in the upper abdomen with a palpable gall bladder. The haemoglobin concentration was 13 g/dl, blood glucose level was 15 mmol/L and total bilirubin level in the serum was 56 umol/L with direct fraction accounting for 36 µmol/L. Serum alkaline phosphatase level was 579 U/L. The CT scan of the abdomen showed mild intra- and extra-hepatic ductal dilatation and a hypodense lesion in the second part of the duodenum in the ampullary region with no infiltration in the surrounding fat, but with multiple enlarged lymph nodes at the porta hepatis and in the para-duodenal region. Two hypodense lesions were noted in the right lobe of the liver. The findings were consistent with an ampullary tumour, which could have been metastatic in nature (Figure 1). ERCP undertaken for the third time with an aim to undertake deeper biopsy sections showed an ulcerating ampullary lesion, normal pancreatic duct, and dilated but otherwise normal common duct (Figure 2). Histopathology of the deep biopsy sections was consistent with the diagnosis of ampullary granular cell tumour. Laparotomy revealed two nodules in the right hepatic lobe, enlarged lymph nodes in the porta hepatis and para-duodenal region and a firm rubbery and ulcerating tumour-like lesion involving the ampullary region and adjacent duodenal wall. These features were strongly suggestive of a malignant peri-ampullary tumour with metastases. Excision of the hepatic nodules and debulking deep resection of the tumour with ante-colic gastrojejunostomy and Roux-en-Y cholecystojunostomy was performed. The postoperative course was complicated with prolonged ileus and transient bile-stained discharge from the para-duodenotomy drain (managed conservatively) followed by wound infection necessitating open drainage. The definitive histopathology of the liver nodules was “bile duct hamartomas”, and that for peri-ampullary growth reported “benign ampullary GCT” positive for Periodic acid-Schiff (PAS). Immunohistochemistry, performed manually with antibodies to S-100 protein (S-100), following the manufacturer’s recommended procedure for antigen retrieval (Signa BioScience, St. Louis, Mo), demonstrated diffuse 3+ (strong) nuclear and cytoplasmatic staining for S-100 (Figure 3). The patient was discharged in good health with normal bilirubin and decreasing alkaline phosphatase levels in the serum. He was offered further radical surgery, but he denied any further operation. At the follow-up visit 15 months later, he was asymptomatic with normal liver func-
tion tests (total bilirubin 4.7 umol/L, direct bilirubin 0.9 umol/L, and alkaline phosphatase 88 U/L). Abdominal CT scan done 6 months after surgery showed hypodense shadow of complex nature in the region of the second part of the duodenum, consistent with previous surgery without any evidence of tumour progression, infiltration or metastases.

**Discussion**

Coggins reported the first GCT of the biliary tree at an autopsy in 1952.[4] GCTs constitute less than 10% of all benign biliary tract tumors.[3] A majority of the reported cases involve females (91%) and black Americans (65%) with mean age of 34.7 years (range 11-63 years).[1,3,5] Frequently reported anatomic sites in the biliary tree are: common bile duct (28%), cystic duct (28%), common hepatic duct (24%), intra-pancreatic bile duct (23%) and gall bladder (7%).[1] Five cases of multifocal GCTs of the biliary tract have been reported whereas concurrent extra-biliary involvement was noticed in six cases.[3,6] Only four cases of GCT involving the pancreas have been reported to date.[5] Most researchers favour a Schwann cell origin based on the histological, electron microscopic and immunohistochemical findings.[3,5] Histologically, the tumour is unencapsulated and consists of closely packed polyhedral cells with centrally placed uniform round nuclei, granular cosinophilic cytoplasm and absent mitotic activity. The coarse granules are strongly positive for PAS and the tumour is immunoreactive to S-100, neuron-specific enolase, vimentin, cathepsin B and inhibin α.[5,8] No case of malignant GCT involving the biliary tract has yet been reported.[3,8] Clinically, the patients present with abdominal pain (88%), obstructive jaundice (53%) or both (9%).[2,3,5] Rarely, the tumour mimics malignancy with loss of weight, anaemia and obstructive jaundice.[3,9] Preoperative diagnosis is uncommon. Abdominal ultrasonography, CT scan, endoscopic ultrasonography, ERCP, brush cytology, intraoperative needle biopsy and frozen section have been employed as various diagnostic modalities.[1,3,6,10]

Surgery remains the treatment of choice for the GCTs involving the extra-hepatic biliary tract. Complete excision of the tumour with biliary reconstruction offers a cure.[3] For tumours confined to the gall bladder or cystic duct, simple cholecystectomy is recommended.[1] More extensive surgery, including Whipple procedure, is recommended where the intra-pancreatic portion of the bile duct is involved, although simple bypass or diversion of the neoplasm have also been reported for tumours in this location.[1,3,9] Radiotherapy and chemotherapy have no role in the management of such tumours.[3]

Prognosis is excellent after resectional surgery. Recurrences have been reported in inadequately excised lesions with positive resection margins.[3,6,9]

This is the first case of isolated ampullary GCT ever reported in the literature. Our reluctance to perform an extensive radical procedure was on account of the operative findings, presence of liver nodules and presence of enlarged regional lymph nodes with strong intra-operative suspicion of metastatic malignancy. Subsequently, we did offer the patient a definitive resection procedure but the patient was not very keen to undergo a second surgery.
GCTs should be considered in the differential diagnosis of benign lesions presenting with obstructive biliary pathology in young patients, especially black females. Every effort should be made to obtain a preoperative diagnosis. Wide resection offers the best chance of cure. GCT may occur in the ampullary location. Due to the accessible location of the tumour, preoperative diagnosis is easy on ERCP and biopsy. Deep biopsies are recommended whenever initial biopsies are reported as non-specific. The clinician should keep a low threshold for an extensive resection procedure whenever preoperative diagnosis is available.

References