Pathophysiology, Incidence and Implications in Intraductal Papillary Mucinous Neoplasia of the Pancreas

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Pathophysiology of IPMN

Adenocarcinoma arising from IPMN has been considered more [47] than the malignant characteristics of IPMN. The cause of the development of IPMN is not fully understood, though they have been linked to several molecular changes. According to Gallucci et al. (2012) mutation of K-Ras, an oncogene responsible for regulating the division of cells, is present in up to 65% of IPMNs. Other molecular abnormalities include alterations in CIN192a, ring finger proteins 43 and 41, SMAD4, STK11, MUC1, MUC2 and 5, and promoter sequence hypermethylation (Sheib, Howell & Kent, 2014).

The pathogenesis of IPMN is significant because the cellular changes are often asymptomatic and can progress to an invasive adenocarcinoma, with a 5-year survival rate of which is <1-44% (American Cancer Society, 2014).

Immunoperoxidase staining of the ductal epithelium of IPMN

IPMN are a precursor to invasive pancreatic adenocarcinoma. Recognizing the clinical significance is essential in practice and educating patients about their implications is an important role of the practitioner. Management of those prone to this disease varies and may depend upon subtype, patient age, comorbidities and risk of metastatic spread. A multidisciplinary approach may be the preferred approach for patients particularly those with without suspicious findings (Reich et al., 2014).

Conclusion

Patients with main duct and side branch IPMNs are asymptomatic. Symptoms are usually gastrointestinal discomfort and/or distress, vomiting, back pain or tenderness, and weight loss (Gallucci et al., 2012). Symptoms predictive of malignancy include jaundice, weight loss or diabetes (Gallucci et al., 2012).

Radiologic evidence of IPMN includes the presence of a cystic lesion with a dilated main duct and evidence of communication between the cyst and the duct. MRI is more sensitive for detecting a mural nodule, which is a characteristic of IPMN (Uehara et al., 2011). Signs of IPMN on endoscopic ultrasonography include the presence of papillary growth in the ducts of the pancreas, communication between the cyst and the duct (either main or branch), and/or a clearly dilated main duct (Grunewald et al., 2011) with or without the presence of mucin within the duct (Gallucci et al., 2012). Presence of mucin in the duct can have the clinical "fish eye" appearance. Fine needle aspiration often demonstrates atypical cells or mucin, and later study evaluation of a resected specimen is necessary.

As presented, it is important to be able to recognize IPMN as pre-malignant lesions and to act quickly to identify patients requiring further work-up. Since the prognosis of pancreatic adenocarcinoma is dismal, the early identification and treatment of IPMN, or pre-malignant lesions is imperative to improve outcomes (Mehta et al., 2011).

Case Presentation

The patient is a 51 year-old female who was noted to have multiple liver lesions following the time of imaging for a colon polyp. The patient was under surveillance for these liver lesions, which were felt to be focal nodular hyperplasia (FNH).

Pathological findings of the liver resection revealed a nodular mass measuring 4 cm, which was highly suggestive of FNH. The resection margins were negative. The final staging was T1N0 (stage Ia). The patient was referred to medical oncology and chemotherapy was recommended.

References

Takayama, K., Ohno, K. (2014). Mucinous cystic neoplasms (MCN), are uncommon neoplasms (IPMNs) of the pancreas. They are classified into two major subtypes, branch IPMNs and main duct IPMNs. Patients with main duct and side branch IPMNs are asymptomatic. Symptoms are usually gastrointestinal discomfort and/or distress, vomiting, back pain or tenderness, and weight loss (Gallucci et al., 2012). Symptoms predictive of malignancy include jaundice, weight loss or diabetes (Gallucci et al., 2012).

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