Chordoma: Clinical etiological observations in two patients

Key Words: Chordoma, cancer etiology

Running Title: Chordoma

Abstract

B./A: Chrodoma is a rare bone cancer

Rare

This could point to a common etiologic factor (T gene alteration?). Chordoma is part of a nuclear family with gastrointestinal cancer.

Conclusions: 1. Clinical observations point to common etiologic factors of chordoma and melanoma. 2. Chordoma is a hereditary gastrointestinal cancer.

Rare diseases are a clinically heterogeneous group of about 6500 disorders (1). 6-8% of people have a rare disease (2). In 2011 a consortium was launched to foster international research collaboration (3). There are many rare diseases in oncology. Every childhood cancer is rare. Nearly 13% (1 in 8) of all cancers in adults are rare (4). Rare events can be clues to cancer etiology (5). … clinicians play a key role in the detection of rare diseases (6). One example is a recent observation of … of parts of chromosomes in 2 of 7 patients with pancreatic neuroendocrine tumors (7). Chordoma is a rare disease. It is a bone cancer showing notochordal differentiation for the axial skeleton. Most chordomas are sporadic. 27% of them have somatic duplications of the notochordal transcription factor … which has been proposed to prevent the notochord from progressing into senescence (8). Rare familial cases of chordoma are attributable to germline tandem duplication of the T gene (9). The purpose of this article is to present clinical etiological observations on 2 patients with chordoma.

Material and Methods

Patiens. In 37 years of medical oncology practice (start on April 1, 1981), 2 out of 2201 patients (0.09%) had chordoma. 1 male patient: age of diagnosis and death: 7 years. 1 male patient: age of diagnosis 60 years; age of death 61 years.

Methods: Etiological information has been obtained from patients and their families with the help of a German translation of the NCI Medical History Questionnaire for Cancer Etiology (10) and through the study of medical charts.

Results

Personal History. The first male patient had a metastatic spindlecell melanoma of the anus. After resection of the rectum a incidental chordoma (1.8 * 1.0 * 0.7 cm) was excised. A/ autopsy one year later there was no chordoma tissue found.

The second male patient was diagnosed at the age of 7.5 years with a malignant chordoma at the base of the skull and died soon after.

Family history. Both patients have a positive family history for malignancies. Fist patient. His father was a heavy smoker and died from lung cancer at age 63 (anamnestic diagnosis). Second patient. His father had an adenocarcinoma of the stomach (histologic diagnosis) at age 61 and died of it at age 63. He also had a epithelial cyst and a dental root in the upper jaw (histologic diagnosis). The patient had two brothers, both with malignancies (11). One brother, a baker, died of metastatic diffuse type gastric cancer (histologic diagnosis) at age 36. The second brother died of metastatic adenocarcinoma of the cecum at age 61 (histologic diagnosis). He also had a congenital aplasia of the left thigh.

Discussion

The main observation is an association of chordoma with other malignancies. In one male patient a melanoma (cell origin: neural crest) of the anus coincided with a nearby sacral chordoma (cell origin: notochord). Multiple primary carcinomas may be informative of common environmental or genetic factors. Melanomas original from melanocytes which are formed in the neural crest in their embryonal state. Then melanocytes migrate to many different body regions during fetal development. Chordomas form from left-over cells that we import in the spine before birth. These cells are called notochord. A common causal factor (T gene alterations?) could be the etiology of nearby malignancies originating form neighboring segments of the notochord and the neural crest. A second male patient had a chordoma at the base of the skull. His father and on e of his two brothers had anticarcinoma of the stomach. A second brother had adenocarcinoma of the cecum. Chordoma could therefore be part of one of the hereditary stomach and or colorectal cancer syndromes (12).

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