

Research

The Frequency of Clubbing in Lung Cancer

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Abstract

Objectives: Clubbing is the enlargement of the distal segment of a digit due to an increase in soft tissue. It can be hereditary or acquired. Acquired clubbing is seen in a wide variety of diseases including chronic inflammatory diseases, infections and congenital heart diseases. It can also be a paraneoplastic marker. It has been proposed that ectopic growth hormone is secreted in case of lung carcinoma. In this study, our purpose was to determine the frequency of clubbing in lung cancer, the frequency according to the histopathological type and the relationship between clubbing and growth hormone levels.

Methods: 100 cases with primary lung cancer, 100 with chronic lung disease and 100 healthy individuals were included prospectively in our study. Cases with lung carcinoma were grouped according to the histopathological type of the cancer and evaluated for the presence of clubbing by the same physician. Plasma growth hormone (GH) levels were measured and bone scintigraphy was performed on the patients who had clubbing.

Results: Of the 100 patients with lung cancer, clubbing was found in three males(3%). No pathology was demonstrated in the GH levels and bone scintigraphies in these three cases.

Conclusion: Although it has been suggested that ectopic growth hormone secretion in lung carcinoma is responsible for clubbing, we found no significant association between clubbing in lung carcinoma and GH levels in our study.

Introduction

Clubbing of the digits is an important finding especially in lung diseases and it occasionally constitutes a valuable clue for diseases of lungs and pleura, and it may also be associated with other systemic disorders. Although it is a very common sign, there is little known about its pathogenesis [1, 2, 3, 4].

In this report, we aimed to study the frequency of clubbing in lung carcinomas, to

compare the frequencies seen in the chronic lung diseases and in healthy individuals and to examine the relationship between clubbing and growth hormone levels.

Materials and Methods

Between January-May 2003, 100 cases (3 female, 97 male) diagnosed as lung carcinoma at Oncology Education and Research Hospital, were included in our study.

As a second group; another 100 cases who had chronic lung disease other than carcinoma were included. As the control group, we selected 100

healthy individuals whose age and sex were consistent with the first group statistically.

The study groups were examined by using inspection method by the same investigator. These four criteria were looked for in at least five fingers [5]:

1. Loss of the hyponychial angle on the dorsum of the finger when viewed laterally
2. Alteration in texture of the soft tissues with increased fluctuation and mobility of the nail
3. Increase in volume of the distal segment
4. Increased curvature of the nail in one or both planes.

Also the patients' demographic features and the pathological subtypes of carcinoma as small cell lung carcinoma (SCLC), and non-small cell lung carcinoma (NSCL) were documented.

Plasma growth hormone (GH) was measured and bone scintigraphy was performed in the patients with clubbing.

Results

In the first group consisting of 100 patients with lung carcinoma; Three of them (3%) were female and 97 (97%) were male. The ages of the cases were between 33 and 76 years. The mean age was 62. Of the 100 patients; 27 (27%) were diagnosed as SCLC and 73 (73%) were diagnosed as NSCLC histologically. Clubbing was present in three male patients (3%). Of the three patients, two had NSCLC, and one had SCLC. Serum GH level was measured and bone scintigraphy was performed in the patients with clubbing. All of the three patients had normal GH levels and no pathology was found in their bone scintigraphies.

In the second group, 100 patients with chronic lung disease matched according to age and sex were included. Ten of them (10%) were female, 90 of them (90%) were male. Of the 100 patients; 80 of them had chronic obstructive lung disease, 10 had interstitial lung disease and 10 had tuberculosis. None of them had clubbing.

The third group consisted of 100 healthy individuals (8 were female, 92 male). There were no differences between the ages and sex when compared with the two groups. These individuals had no systemic diseases and none of them were using any medications and had clubbing.

Discussion

Clubbing is the bulbous enlargement of the distal segments of the digits due to an increase in soft tissue [1, 2, 3]. It is a frequent finding especially in lung diseases. Although the pathogenesis is still unknown, vasodilatation of vessels in the fingertip appears to be a factor. The reason for this preferential vasodilatation is unclear. There are also other theories; the most popular ones are the neurogenic, hormonal and shunt theories [1, 3, 4, 5].

Clubbing can be hereditary or acquired. In acquired cases; clubbing can be seen with cardiovascular disorders (aortic aneurysm, congenital cardiomyopathy), bronchopulmonary disorders (intrathoracic neoplasms, chronic intrathoracic suppurative diseases), gastrointestinal disorders (inflammatory bowel disease, gastrointestinal neoplasms, liver disorders, multiple polyposis), chronic methemoglobinemia [2, 3].

Clubbing can be demonstrated in several ways. Frequently, inspection method is used, as we performed. There are also other reports about using digital index method and positron emission tomography [5].

Clubbing can be seen with hypertrophic osteoarthropathy (HOA) [1, 2, 3, 4]. HOA is associated with soft tissue increase around the joints clinically and by new subperiosteal bone appearance radiographically. Growth hormone is a secretory product of some primary bronchial neoplasms and has been associated with the development of hypertrophic pulmonary osteoarthropathy [6, 7]. In our study, we investigated the prevalence of clubbing in lung carcinoma, and the association of clubbing with growth hormone levels. None of our cases had HOA.

Gosney *et al.* investigated the role of growth hormone or a related substance in the pathogenesis. Gosney *et al.* demonstrated 21 patients with clubbing in their study consisting of 60 patients with lung carcinoma. They also found GH levels higher in bronchial carcinoma group than the control group and reported a significant association between increased plasma GH and clubbing [7].

Sridhar *et al.* reported a study including 110 cases with lung cancer and observed clubbing in 29 out of 110. In 29 patients,

clubbing was less frequently observed in patients with SCLC than NSCLC [8]. Yorgancioglu *et al.* reported a study including 40 cases with primary lung carcinoma of whom twenty had clubbing and measured the levels of GH in two groups with clubbing and without clubbing. They demonstrated no relationship between clubbing and GH levels [9].

Although previously published reports demonstrate a higher ratio, in our study we could not perform statistical evaluation between three groups since no clubbing was detected in chronic lung disease and control groups. Three patients with clubbing had normal levels of GH and bone scintigraphy. Further studies with large patient groups are needed to clarify the exact association.

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