Yawning associated with anterior chest pain in a patient with asthma.

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Abstract: We present a case of a patient with asthma who developed yawning associated with anterior chest pain. She was admitted due to severe anterior chest pain, wheezing and dyspnea. Although the frequency of the symptoms decreased, she began to experience frequent episodes of yawning at night accompanied by tears. While she experienced yawning, although PEF (peak expiratory flow) decreased, no asthmatic symptoms, such as wheezing or dyspnea, were observed. The yawning was improved markedly by bronchodilators and a leukotriene receptor antagonist, and moderately improved by corticosteroids. We speculated that yawning is a clinical manifestation of asthma that responds to treatment.

Key Words: yawning, chest pain, nocturnal dyspnea, asthma

Case Report

A 64-year-old woman was admitted to our hospital in February 1993, due to severe anterior chest pain, wheezing and dyspnea. She experienced sudden chest pain that gradually became more severe, accompanied by vomiting, wheezing, coughing and dyspnea. She had been asymptomatic until two years prior to admission, when wheezing and dyspnea began. Her serum IgE level was 2139 IU/ml, and both a skin test and a radioallergosorbert test (RAST) were positive against house dust mites. According to episodic symptoms of wheezing and dyspnea, the patient showed a reversible airway response with an increase in forced expiratory volume in one second (FEV₁) exceeding 20% in response to β₂-agonist and showed increased bronchial hyperresponsiveness to methacholine (PC20: the concentration of methacholine causing a 20% decline of FEV₁, 390 μg/ml). She was diagnosed as having bronchial asthma. Other potential causes of the chest pain were ruled out according to the findings of upper gastrointestinal endoscopy, chest radiography, chest computed tomography, electrocardiogram and ultrasonic cardiography. Coronary angiography also failed to
CASE REPORT

Table 1: Symptom Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Wheezing and dyspnea</th>
<th>Anterior chest pain</th>
<th>Yawning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at onset</td>
<td>61</td>
<td>62</td>
<td>63</td>
</tr>
<tr>
<td>Time when they occur</td>
<td>At any time</td>
<td>More frequently at night than during daytime</td>
<td>Only at night</td>
</tr>
<tr>
<td>Duration</td>
<td>Indefinite</td>
<td>Indefinite</td>
<td>For 30 to 40 minutes</td>
</tr>
<tr>
<td>Frequency</td>
<td>Often</td>
<td>More than 2-3 times per day</td>
<td>Only one time at night</td>
</tr>
<tr>
<td>Fall in PEF</td>
<td>Markedly</td>
<td>Slightly</td>
<td>Moderately</td>
</tr>
<tr>
<td>Effects of treatments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>β2-agonist</td>
<td>(+)</td>
<td>(+)</td>
<td>(+++)</td>
</tr>
<tr>
<td>amiphylline</td>
<td>(+++)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>corticosteroid</td>
<td>(+++)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>LTRA</td>
<td>(+++)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>DSCG</td>
<td>(*)</td>
<td>(±)</td>
<td>(±)</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>(++)</td>
<td>(++)</td>
<td>(±)</td>
</tr>
</tbody>
</table>

More frequently Only at night than during daytime
Indefinite
For 30 to 40 minutes
Only one time at night
Moderately

(++) The symptoms completely disappeared or were markedly improved
(+) moderately improved
(±) slightly improved
(±) no change
LTRA: leukotriene receptor antagonist
DSCG: disodium cromoglycate
NSAIDs: nonsteroidal anti-inflammatory drugs

reveal either stenosis or atherosclerotic changes. Gastroesophageal reflux disease was also concluded to be an unlikely cause of the chest pain given that a proton pump inhibitor was not effective in reducing the chest pain. After being admitted, she was treated with corticosteroids, nebulized β2-agonist and intravenous amiphephrine for her wheezing and dyspnea, and a nonsteroidal anti-inflammatory suppository for the chest pain.

Following discharge, although the frequency of chest pain decreased, she began to experience frequent episodes of yawning at night accompanied by tears. Her yawning occurred once every thirty to forty minutes, especially on cold nights from November to March with no sensation of dyspnea or chest pain. Her pulmonary function was normal (114.5% of predicted forced vital capacity (FVC), 113.8% of predicted FEV1) when she was asymptomatic. While she experienced yawning, although PEF (peak expiratory flow) decreased somewhat (50-80% of her maximum level), no asthmatic symptoms, such as wheezing or dyspnea were observed. The yawning was improved markedly by bronchodilators and a leukotriene receptor antagonist, and moderately improved by corticosteroids. In summary, three different symptoms, namely wheezing and dyspnea, anterior chest pain and yawning, were observed in the present case. The characteristics of each symptom are summarized in Table 1.

Yawning is a complex behavioral event that depends largely on the autonomic nervous system, which has been reported to be associated with a sympathetic suppression that favours a parasympathetic dominance (1). Yawning is under the control of several neurotransmitters and neuropeptides at the central level. Substances that induce yawning include dopamine, excitatory amino acids, acetylcholine, serotonin, nitric oxide, adrenocorticotropic hormone-related peptides and oxytocin. Opioid peptides are known to inhibit yawning (2). Despite recent progress, little is known of the neurochemical mechanisms underlying yawning at the central level. The administration of dexamethasone altered yawning behavior induced by cholinergic but not dopaminergic agonists (3). Further research is needed to identify these factors.

Asthma shows a wide variety of clinical manifestations, one of which is chest pain. Three reported cases of chest pain variant asthma have suggested its importance as a clinical entity for patients who initially present with chest pain. Two patients required a short course oral corticosteroid treatment to achieve symptom ablation (4). Asthma symptoms (cough, dyspnea, wheeze, chest tightness, sputum production and nocturnal awakening) correlated poorly with the level of airway obstruction (5). However, the present case developed nocturnal yawning associated with noncardiac and nonesophageal chest pain and airway obstruction. The reason for the occurrence of yawning and chest pain remains obscure, but the autonomic nerve
system may have played an important role in their occurrence. Our case suggests that yawning is a clinical manifestation of asthma that responds to treatment.

References


'あくび' と胸痛を訴えた気管支喘息の1症例

光延文裕，芦田耕三，保崎泰弘，柘野浩史，
岡本 誠，西田典数，永田拓也，高田真吾，
谷崎勝朗

岡山大学医学部三朝医学センター内科

64歳の女性。1993年2月に高度の前胸部痛、喘鳴、呼吸困難を主訴として入院した。入院後、前胸部痛、喘鳴、呼吸困難は徐々に軽快傾向であっ
たが、夜間流涙を伴う‘あくび’が頻回に出現するようになった。‘あくび’が出現する時には、
喘息症状（喘鳴、呼吸困難）は伴わないが、ピー
クフローに低下を認めた。‘あくび’に対する治
療としては、気管支拡張薬、ロイコトリエン受容
体拮抗薬は著効、副腎皮質ステロイド剤は中等度
有効であった。‘あくび’は治療に反応する喘息
の1症状であることが示唆された。