

Approach to Internal Medicine

A Resource Book for Clinical
Practice

David Hui · Alexander A. Leung ·
Christopher Ma *Editors*

Fifth Edition



Springer

Editors

David Hui
The University of Texas MD
Anderson Cancer Center
Houston, TX
USA

Alexander A. Leung
University of Calgary
Calgary, AB
Canada

Christopher Ma
University of Calgary
Calgary, AB
Canada

ISBN 978-3-030-72979-0 ISBN 978-3-030-72980-6 (eBook)
<https://doi.org/10.1007/978-3-030-72980-6>

© The Editor(s) and The Author(s), under exclusive license to Springer Nature
Switzerland AG 2022

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Chronic Cough

Gibson et al. *Chest* 2016;149(1)

DIFFERENTIAL DIAGNOSIS

NON-PULMONARY—GERD, reflux-cough syndrome, ACE inhibitors, occult congestive heart failure

PULMONARY

- **AIRWAY**—post-nasal drip/upper airway cough syndrome, asthma, chronic bronchitis, non-asthmatic eosinophilic bronchitis, bronchiectasis, neoplasm, foreign body, post-viral
- **PARENCHYMA**—occult infection, occult aspiration, interstitial lung disease, lung abscess
- **VASCULAR**—early pulmonary hypertension

PATHOPHYSIOLOGY

DEFINITION OF CHRONIC COUGH—>3 weeks; unexplained chronic cough is defined as cough persisting >8 weeks

COMPLICATIONS OF CHRONIC COUGH—exhaustion, insomnia, anxiety, headaches, dizziness, hoarseness, musculoskeletal pain, urinary incontinence, abdominal hernias

COUGH REFLEX

- **AFFERENT**—chemical or mechanical stimuli → cough receptors in the epithelium of the upper and lower respiratory tracts, pericardium, esophagus, diaphragm, and stomach → afferent nerves (vagus, glossopharyngeal, trigeminal, and phrenic) → cough center in the medulla
- **EFFERENT**—cough center with cortical input → efferent signals travel down the vagus, phrenic, and spinal motor nerves → expiratory muscles → cough

INVESTIGATIONS

BASIC

- **MICROBIOLOGY**—sputum Gram stain/AFB/C&S
- **INDUCED SPUTUM ANALYSIS FOR EOSINOPHIL COUNT**
- **IMAGING**—CXR (order inspiratory and expiratory views if foreign body aspiration or endobronchial lesion suspected); consider CT chest if indicated
- **SPIROMETRY/PFT**

SPECIAL

- **SINUS IMAGING**
- **BRONCHOPROVOCATION TESTING (i.e. METHACHOLINE CHALLENGE)**
- **ESOPHAGEAL PH MONITORING**

MANAGEMENT

TREAT UNDERLYING CAUSE—switch to ARB if ACE inhibitor suspected as cause of chronic cough; smoking cessation if chronic bronchitis

SYMPTOM CONTROL

- **PHARMACOLOGIC MEASURES**—*benzonatate* 100 mg PO q8h PRN, *codeine* 7.5–60 mg PO BID, *dihydrocodeine* 5–10 mg PO TID, *hydrocodone* 5 mg PO BID, *morphine* 7.5–15 mg PO BID, *dextromethorphan* 10–30 mg PO q6h, *sodium cromoglycate* 10 mg NEB QID, *levodropropizine* 75 mg PO TID, *guaifenesin* 200–400 mg PO q4h or 600 mg PO BID, *gabapentin* 100–300 mg PO TID
- **NON-PHARMACOLOGIC MEASURES**—consider endobronchial therapy for cancer airway lesions, high intrathoracic vagotomy in refractory severe cases

SPECIFIC ENTITIES**POST-NASAL DRIP/UPPER AIRWAY COUGH SYNDROME**

- **PATHOPHYSIOLOGY**—secretions in the upper airway stimulate cough receptors within the pharyngeal or laryngeal mucosa
- **CAUSES**—allergic, perennial non-allergic rhinitis, vasomotor rhinitis, acute nasopharyngitis, sinusitis
- **DIAGNOSIS**—non-specific findings; consider sinus imaging

SPECIFIC ENTITIES (CONT'D)

- **TREATMENTS**—reduce irritant exposure, antihistamine-decongestant combinations (*diphenhydramine* 25–50 mg PO q4–6 h PRN, pseudoephedrine, *ipratropium nasal spray* 0.03% 2 sprays/nostril BID–TID, nasal corticosteroids, nasal saline rinses BID), surgical correction for anatomical abnormalities