Thorax 1986;**41**:152–153

Short reports

Mycobacterium gordonae: a new pathogen?

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Mycobacterium gordonae is a slow growing scotochromogenic acid fast bacillus (Runyon group II) with specific cultural and biochemical characteristics.[1] It is a contaminant of water, soil, and raw milk and is usually considered to be saprophytic and non-pathogenic in man.[2] We have recently seen two cases of pulmonary disease that may have been due to *M gordonae*, and we now report these and review our recent experience of this organism.

Case reports

CASE 1

A 76 year old man was admitted in November 1983 to a geriatric assessment unit for rehabilitation. He was noted to be frail and anorexic and a chest radiograph showed extensive shadowing in the right upper zone. Acid and alcohol fast bacilli were seen in three sputum samples. He was given antituberculosis chemotherapy with rifampicin 450 mg and isoniazid 300 mg, supplemented by ethambutol 1000 mg daily for the first 12 weeks. During the next six months his general condition improved, he put on 6 kg in weight, and there was considerable clearing of the radiological shadowing in the right upper zone. Culture of all three sputum samples produced a pure growth of innumerable orange colonies of an atypical mycobacterium. This organism was scotochromogenic at both 25°C and 37°C, a nitrate reductase test gave a negative result and a Tween hydrolysis test a positive result, and it was classified as *M gordonae*. *Mycobacterium tuberculosis* was not isolated from any of the three specimens. In vitro sensitivity tests showed that the organism was susceptible to rifampicin but resistant to both isoniazid and ethambutol. In view of his clinical and radiological improvement the patient continued to take rifampicin and isoniazid and completed 18 months' treatment. Four sputum cultures during the course of treatment did not grow any mycobacterial organisms.

CASE 2

A 60 year old salesman presented in August 1984 with a three week history of loss of energy and anorexia. Over the previous eight months he had lost about 7 kg in weight and become breathless on exertion, and had complained of a persistent cough productive of clear sputum. In 1950 he had had two episodes of pneumonia, at which time he was told that his chest radiograph showed evidence of previous tuberculosis. On examination he appeared unwell and crackles were audible at both lung apices. A chest radiograph showed large cavities at the apices of both lungs with widespread patchy consolidation bilaterally. He was thought to have active pulmonary tuberculosis and direct smear of one sample of sputum demonstrated acid and alcohol fast bacilli. He therefore started treatment with rifampicin 600 mg, isoniazid 300 mg, and ethambutol 1000 mg each morning. During the next three months his general condition improved, his appetite returned, and he put on 5 kg in weight. Culture of the sputum sample grew a pure growth of over 100 colonies of *M gordonae*. This organism was scotochromogenic at both 25°C and 37°C, a nitrate reductase test gave a negative result and a Tween hydrolysis test a positive result. In vitro it was sensitive to rifampicin but resistant to both isoniazid and ethambutol. *M tuberculosis* was not isolated from this specimen. The chest radiograph, however, showed progressive clearing of the areas of consolidation and shrinkage of the apical cavities and a tine test was negative. It was thought that he was responding to the chemotherapy and therefore ethambutol was stopped after three months and rifampicin and isoniazid were continued to complete a standard nine months' regimen of antituberculosis chemotherapy. Sputum culture for mycobacteria in February 1985 failed to grow any organisms.

OTHER CASES

At the Scottish Mycobacteria Reference Laboratory, City Hospital, Edinburgh, during 1983 and 1984 *M gordonae* was isolated from specimens from 14 patients. Their mean age was 70 years and five were women. In 10 patients, including the two reported here, the organism was cultured from the sputum; in one case it was grown from bronchial aspirate taken at bronchoscopy; and in the remaining three it was isolated from early morning urine samples. Apart from the two patients we describe, less than 30 colonies were grown from each isolate and in none of the remaining 12 patients was *M gordonae* considered to be a pathogen. In two cases *M gordonae* was isolated from sputum one month after previous sputum culture had grown *M tuberculosis*. In vitro testing of the organism showed consistent sensitivity to rifampicin and cycloserine and resistance to most other commonly used antituberculosis drugs.

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Accepted 2 September 1985

Discussion

Non-tuberculous mycobacteria have been the focus of increasing interest as their role as occasional human pathogens has been recognised. *M gordonae*, formerly known as *Mycobacterium aquae*, is considered to be among the least pathogenic of this group of organisms and when cultured is usually thought to be a water-borne contaminant. A cluster of *M gordonae* isolates were obtained from bronchoscopy specimens from 52 patients in one hospital but in none of these was this organism thought to be causing infection.[3] There have been four reports of disseminated *M gordonae* infection associated with meningitis in a hydrocephalic child who had multiple shunts, prosthetic aortic valve endocarditis, olecranon bursitis, and peritonitis,[4 5] and two cases associated with malignancy.[6] Only one case of pulmonary infection with *M gordonae* has been reported—a chronic alcoholic who died with extensive pulmonary cavitation and fibrosis. In both of our cases, acid and alcohol fast bacilli were seen on examination of the initial sputum smear, but *M tuberculosis* was not grown and large numbers of colonies of *M gordonae* alone were isolated on culture. We are aware of the possibility that *M tuberculosis* could have been masked by an overgrowth, but the colonial appearances of the organisms isolated make this unlikely. The organisms fulfilled the biochemical criteria for *M gordonae*, being scotochromogenic at both 25°C and 37°C, nitrate reductase negative, and Tween hydrolysis test positive. In the second case a tuberculin test also gave a negative result, confirming that the infection was probably due to a non-tuberculous organism. Despite the in vitro sensitivity test results, both patients responded to standard antituberculosis chemotherapy and repeat sputum cultures failed to grow any organisms. This suggests that, as with other non-tuberculous mycobacterial infections,[7] there is a poor correlation between in vitro resistance and the results of treatment.

During 1983 and 1984 *M gordonae* was isolated from specimens sent to our laboratory from 12 other patients. In none of these cases was this organism thought to be causing infection. The findings in our two cases suggest that *M gordonae* may cause pulmonary disease and should be considered as an occasional pathogen.

We wish to thank Mr A Rayner and the staff of the bacteriology departments at the City Hospital, Edinburgh, and the Victoria Hospital, Kirkcaldy.

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Book notices

Lung Biology in Health and Disease—Vol 25: Gas Mixing and Distribution in the Lung. Ludwig A Engel, Manuel Paiva. (Pp 416; $75.) Marcel Dekker, 1985.

Gas Mixing and Distribution in the Lung, edited by Ludwig Engel and Manuel Paiva, represents the latest addition to the series of monographs in the series "Lung Biology in Health and Disease". The editors, a physician and physicist, are to be congratulated on the imaginative concept of inviting contributions not only from physicians but also from scientists and engineers. As early as 1667 it was recognised that the flow of fresh gas into the lungs was fundamental to the preservation of life. Many defects remain in our knowledge of the disorders of ventilation and gas mixing, which are so often impaired in the early stages of respiratory disease. The topics covered include concepts of molecular diffusion, anatomical factors influencing gas mixing and distribution, gas transport in the conducting airways, alveolar ventilation at high frequencies, regional ventilation distribution, and gas mixing in the lung. While each chapter is autonomous, the global concept is apparent and the book provides an invaluable survey of this important, ill understood area of respiratory physiology. Furthermore, the text does not lose sight of the practical clinical problems confronting the respiratory physician. This is a well written, carefully illustrated text, with accurate and up to date references. Editorial discipline has prevented the repetition which readers find irritating in multiauthor volumes. The book is highly recommended for the library of respiratory physiologists; individual chapters would be particularly helpful for a research worker embarking on studies in this interesting area of investigation.—RMC

Recent Progress in Mitral Valve Disease—Carlos Duran, William W Angell, Allen D Johnson, James H Oury. (Pp 483; £55.) Butterworths, 1984.

The second international symposium on the mitral valve was held in California in 1982. This book contains the contributions made by acknowledged authorities from both the United States and Europe. The emphasis is on the function of the normal and diseased valve and surgical reconstruction or replacement. Given the two years that have elapsed since the symposium, this book offers a most valuable and comprehensive survey of the subject, which should be an essential addition to any cardiac surgery unit library. It is not easy to select from the many admirable contributions, but the thoughtful and amusing review by Donald Ross and the section that attempts to obtain a consensus view on the ideal valve replacement are of particular interest. The latter employs a novel way of eliminating personal bias. The discussants, most of whom are associated with a particular prosthesis or technique, are asked to name their *second* choice of valve substitute—with reasons. The management of congenital abnormalities is dealt with comprehensively. Cardiac surgeons will find much to stimulate and interest them in this book.—DBC