RM-15 Molecular and conventional epidemiology of tuberculosis in Hong Kong—a population-based prospective study

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Objective: The purpose of the study was to determine the pattern of transmission of tuberculosis in Hong Kong by conducting a prospective molecular and conventional epidemiology study
Methods**:** All notified patients residing in the Island of Hong Kong with culture positive tuberculosis were recruited for the study from May 1999 to October 2000. Contact investigation was carried out and demographic and clinical information was obtained. The restriction fragment length polymorphism (RFLP) technique was used to determine DNA patterns of M. tuberculosis isolates.
Results: Of the 702 isolates that had RFLP analysis with the IS6110 probe, only 11 (1.6%) had 5 bands or less. 169 (24.5%) of the 691 remaining patients had sputum isolates that belonged to clusters. Significant predictors of belonging to clusters were permanent residency vs new or nonresidents (RR 4.57 95% 1.39-14.9) in Hong Kong and a history of travel to Mainland China in the past 2 years (RR 1.74, 95% CI 1.22-2.47). Risk factors such as alcohol and drug abuse, imprisonment, and HIV infection were not important.
Conclusion: While the majority of active tuberculosis in Hong Kong is due to reactivation, there is still a proportion of disease due to recent transmission that is higher than expected. The lack of epidemiological link in the majority of clustered patients suggests transmission of disease could be through casual contact.

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RM-16 Differential regulation of cytokine-and phorbol ester-induced activation of nuclear factor kappa B by *Pseudomonas aeruginosa* pyocyanin in human airway epithelial cells

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Introduction: Non-cystic fibrosis bronchiectasis is a common disease in Chinese, and its pathogenesis is poorly understood. Gradual destruction of the airways occurs from a combination of chronic airway inflammation and infection. Many patients eventually harbour *Pseudomonas aeruginosa* (PA), which produces pyocyanin (PYO), a blue phenazine pigment, in their lower respiratory tract. This study investigates the effects of PYO on cytokine- and phorbol ester-induced activation of NFkappaB in stable transfected A549 cells.
Method: The human lung epithelial cell line, A549, was stably transfected with the reporter gene construct (p6kappaBtklucneo) containing six tandem NFkappaB motifs (GGGACTTTCC), and subsequently maintained in medium containing 0.5mg/ml G-418. After treatment for 6h with cytokines and drugs, cells were harvested in reporter lysis buffer by one freeze-thaw cycle. Bioluminescence in the cell lysates was assayed using a commercially available luciferase reporter gene assay kit (Promega).
Results: Cytokines (IL-1beta or TNF-alpha) or phorbol 12,13-dibutyrate (PDBu) activated NFkappaB-driven luciferase activity in a dose-dependent manner. In the presence of pyocyanin, the IL-1beta- and TNF-alpha-induced activation was significantly attenuated [1.0 ± 0.1 vs 0.43 ± 0.04 and 0.45 ± 0.05 for cytokine alone and PYO plus IL-1beta (1ng/ml) or plus TNF-alpha (10ng/ml) respectively; $n = 4 - 5$], while the PDBu-induced activation was significantly potentiated (1.0 ± 0.03 vs 1.46 ± 0.16 for PDBu alone and PYO plus PDBu at 10^{-7}M respectively; $n = 4$).
Conclusion: We conclude that potentiation of NFkappaB-dependent transcription by PDBu in PYO-treated cells may imply the involvement of PKC pathway in the chronic airway inflammation in bronchiectasis.
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