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Leprosy from a different perspective

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We have recently written about leprosy and its treatment that has proven to be an incredible achievement in medical history. This biblical disease has been brought under control and the worldwide incidence has decreased from 12,000,000 in 1975 to 800,000 in 2015. The only thing that changed in that time span was the addition of rifampin to the treatment regimen. Rifampin “pokes holes” in biofilms and allows dapsone to penetrate and kill the mycobacteria inside. Prior to rifampin, the organism was becoming resistant to dapsone. Clofazamine was also added, but it was useful mainly in relation to managing the reaction states in the disease, mostly erythema nodosum leprosum. Even though rifampin was added as another antibiotic because of resistance, its action was too short lived (3-5 hours half-life) for its activity given the prescribed dosage of once per month. Also, resistance develops rapidly with rifampin, so it seems evident it is behaving differently from its activity as an antibiotic. That different activity is biofilm dispersion. Biofilm is most assuredly present in leprosy because we have observed it not only in “globi” in the skin, but also in the liver, spleen, and kidneys as “secondary amyloidosis of chronic disease.” It stains histopathologically with PAS which stains the polysaccharides make up the bulk of the biomass and with Congo red that stains the amyloid that makes up biofilm infrastructure. TLR2 has been shown to be activated by biofilms, and TLR2 itself has been shown to activate IL4, IL 10 both of which are present in lepromatous leprosy. The fortuitous choice to include rifampin in the multidrug regimen reversed the course of leprosy and offers hope that other chronic diseases would behave similarly.

Biography

Herbert B Allen specialties include dermatology and dermatopathology, skin pathology and fungal infections. He is a graduate of Johns Hopkins University School of Medicine. He has served on the boards of the American Society of Dermatology and the American College of Physicians and has published over 30 scientific articles in the fields of dermatology and dermatopathology. He is the author of 'Keywords' in Dermatology, a book on the language of dermatology. He's board-certified with the American Board of Dermatology and the American Board of Pathology. He is currently an Emeritus Professor in the department of Dermatology where he served as chair of the department for 14 years.

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