Journal Club

The paradox of endemic stability

Endemic stability describes a dynamic epidemiological state in which clinical disease is rare in spite of a high incidence of infection within a population. Such a situation arises if the force of infection is high enough that acquisition of functional immunity occurs in the majority of the population at a relatively young age, when the disease is often mild compared with disease in older individuals. The prevalence of disease in older age classes is therefore reduced by these high levels of protective immunity. The phenomenon is most comprehensively described in the veterinary literature for tick-borne diseases, such as theileriosis, and the paradox is that reducing the force of infection in such situations can counterintuitively result in an increase in clinical disease. Where such conditions exist in the veterinary context, partial control measures are often not recommended.

Coleman *et al.*[1] have developed a generic mathematical model for endemic stability and have hypothesized about its wider occurrence in human public health. The model requires only that: (1) the probability or severity of clinical disease resulting from infection increases with age; and that (2) after first infection, the chance that subsequent infections result in clinical disease is reduced. When these two criteria are satisfied, endemic stability can result, regardless of disease aetiology, and measures that partially reduce the force of infection, such as vector control or mass vaccination, can lead to an increase in clinical disease incidence.

Coleman *et al.*[1] go on to consider the importance of these findings to the debate over the potential impacts of insecticide-treated bed nets (ITBNs) in areas of highly endemic *Plasmodium falciparum* malaria transmission. The partial reduction in force of infection, and hence morbidity and immunity, could in theory at least, result in an increased incidence of severe disease and mortality. Although the reality of endemic stability for *P. falciparum* malaria is still vigorously debated, it has never been suggested that withholding of interventions would be desirable in a human public health setting[2]. These modelling observations, however, do have implications for the design of interventions, and lend further support to calls for the effects of control measures on mortality in areas of endemic malaria to be monitored carefully.

References

1 Coleman, P.G. *et al.* (2001) Endemic stability – a veterinary idea applied to human public health. *Lancet* 357, 1284–1286

2 Snow, R.W. and Marsh, K. (1995) Will reducing *Plasmodium falciparum* transmission alter malaria mortality among African children? *Parasitol. Today* 11, 188–190

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In Brief

C.A. Wright Medal awarded – twice

Richard Grencis.

The C.A. Wright Medal is awarded annually at the British Society for Parasitology Spring Meeting for contributions to the discipline in the broadest sense. The recipient is a scientist in mid-career who, it is considered, will confirm their already outstanding achievements to become a truly distinguished future leader of their field. This sentiment is in keeping with the encouragement of younger parasitologists by Chris Wright, Director of the Experimental Taxonomy Unit at the Natural History Museum, London, UK and the Society's President at the time of his untimely death in 1983, and in whose memory a commemorative medal was instigated. The 2001 award has gone to Richard Grencis of the University of Manchester, UK, for his research on nematode immunology. This has demonstrated a pivotal role for $CD4^+$ T helper 2 cells and mast cells and their cytokines in mediating host protection against intestinal helminth infection, notably trichuriasis, which has been acknowledged as a novel paradigm for the wider field of immunity to pathogens. Recent work has concentrated on defining the precise nature of the cytokine network in mediating resistance and susceptibility to infection and has revealed an interplay between IL-13 and TNF-α in conferring protection against intestinal dwelling parasites. The 2000 Award was also presented at the 2001 meeting to Malcolm Kennedy, University of Glasgow, for his contributions to the field of nematode immunobiology.

Malcolm Kennedy.

AT-R

PAAT and PATTEC: differences and synergy

The Programme Against African Trypanosomiasis (PAAT) is a broad-based international forum supported by FAO, WHO, IAEA and OAU/IBAR committed to the ultimate eradication of African trypanosomiasis from people and their livestock. It has a shared secretariat from these mandated organizations. PATTEC, the Pan African Tsetse and Trypanosomiasis Eradication Campaign, is an embryonic organization formed by a declaration of African Heads of State, demonstrating African concern with an African problem. Its focus is the elimination of tsetse, using every technology, including sterile insect techniques (SIT). The elimination of fruit flies and screwworm by SIT demonstrated the economic benefits of fly-free zones, and similar principles and benefits apply to tsetse eradication. Although both organizations aim to remove trypanosomiasis from Africa, PAAT incorporates a broader international community concerned with matters that

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