

The Neglected

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Abstract

The dividing line between non-communicable and communicable disease is quite blurred. This has been explained through an analogy between neglected tropical diseases (NTDs) and spatial neglect. The electronic databases such as MEDLINE, Tropical Diseases Research Division at the WHO and Google Scholar were consulted and reference lists of articles were searched for relevant material. Spatial neglect is a common complication following stroke. Both NTDs and spatial neglect demonstrate a preference for space and pose challenges in control and management. Although they may appear to be different entities, at least three NTDs (Chagas disease, neurocysticercosis, and schistosomiasis) have been implicated as risk factors for stroke (and thence spatial neglect). This makes NTDs an issue of international concern, unrestricted to the tropics, and too important to be neglected.

Keywords: Africa, Diseases, Neglected diseases, Risk factors, Stroke

Introduction

It is common in public health to come across diseases grouped together on the basis of etiological agents, modes of transmission, or preventive measures. However, a group of no less than 17 parasitic and bacterial diseases as diverse as dengue, rabies, trachoma, leprosy, leishmaniasis, cysticercosis, dracunculiasis, echinococcosis, onchocerciasis, schistosomiasis, African trypanosomiasis, Buruli ulcer, Chagas disease, lymphatic filariasis, endemic treponematoses, food-borne trematode infections, and soil-transmitted helminthiases,^[1] classified together as ‘neglected tropical diseases’ (NTDs), makes one wonder what would help keep these varied members together and why?

With a Latin origin, the word ‘neglect’ means to leave undone or unattended to, especially through carelessness.^[2]

The term strikes remarkable resemblance with a medical condition called spatial neglect.

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explained through an analogy between NTDs and spatial neglect.

Methods of Literature Search

The following electronic sources of biomedical information were consulted: MEDLINE, Tropical Diseases Research Division at the WHO and Google Scholar. The search strategy criteria in these databases included equivalent terms for keywords “neglect”, “spatial”, “tropical diseases” in the title or abstract. The reference lists of articles were searched for relevant material.

Burden of Spatial Neglect

Patients suffering from spatial neglect may eat from only one side of a plate, write on only one side of a page, or shave only one side. The neglect may be so strong so as to deny ownership of the other side, stating that it belongs to someone else.

Spatial neglect is a common syndrome following stroke. The term refers collectively to disorders of spatial cognition, with patients demonstrating signs of contralesional ‘neglect’: A failure, difficulty, or slowness in reporting or interacting with objects and people to one side of their extrapersonal or even personal space.^[3] In addition to these negative signs, patients may also show positive pathological manifestations, such as avoidance or withdrawal from the contralateral side of space. Most of these patients have suffered large right hemisphere middle cerebral artery strokes, with acquired parieto-temporal lesions. The clinical manifestations show a

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wide heterogeneity concerning different domains, including sensory modality, reference frame, spatial scale, or motor effectors.^[4] Persistence of the neglect could be attributed to inhibition by the intact hemisphere of the attention networks in the damaged hemisphere.

Annually, 15 million people worldwide suffer a stroke. Of these, 5 million die and another 5 million are left permanently disabled. The cardiovascular diseases have been considered to be afflicting those belonging to the upper socio-economic groups among industrialized countries.^[5] However, the last few decades have witnessed a reversal of this pattern, and cardiovascular mortality rates have declined substantially in high-income countries.^[5] Population-wide primary prevention and individual health-care intervention strategies have both contributed to these declining mortality trends. On the contrary, the epidemic is progressing relentlessly in developing countries. It has been recognized that those in low socio-economic positions have a poorer risk factor profile, with a resultant lower survival and a higher stroke incidence. Families, as a result, may incur catastrophic spending, and loss of household income driving them below the poverty line.^[6]

Burden of Neglected Tropical Diseases

NTDs are among the top 10 leading causes of years of healthy life lost to long-term disability and premature death worldwide.^[7] Such diseases thrive in hot, humid conditions, principally, in the tropics. The manifestations may be as diverse as anemia, malnutrition, stunted growth, and impaired cognitive development from schistosomiasis; chronic headaches, blindness, and seizures as symptoms caused by space occupying lesions of the central nervous system from neurocysticercosis; and generalized swelling, abdominal pain, cough, rash and painful nodules among those suffering from Chagas disease. What warrants them to be addressed together and in one breath is the fact that these diseases are amongst the most common infections in the estimated 2.7 billion people who live on less than \$2 per day.^[7] A vicious circle wherein poverty stokes disease, and disease in turn increases poverty.

Despite the significance of NTDs in terms of burden of ill health carried by more than one-sixth of the world's population, little financial support has been provided to address these diseases- a spatial neglect of sorts. At least in part, this neglect could stem from the diseases being closely associated with impoverished settings, in communities with low profile and status in public health priorities; little known and poorly understood to the rest of the world.^[1]

It may be coincidental that both these types of neglect are associated with preference for space. But, could there be more to the analogy between these seemingly diverse conditions?

Management of Spatial Neglect

Spatial neglect is considered one of the greatest therapeutic problems facing therapists and rehabilitationists. Treatment may consist of cognitive rehabilitation measures including speech therapy, occupational and physical therapy, neuropsychologic therapy, or a combination of these. Although spatial neglect following a stroke may improve within a few weeks as spontaneous neurologic recovery proceeds, whether patients fully recover is controversial. What is interesting is the dramatic way, in which neglect can in some cases be temporarily or permanently abolished; case reports indicate abrupt disappearance of the unilateral neglect following a second stroke in opposite hemisphere.^[8] A second lesion to the opposite hemisphere is, however, an impractical approach to rehabilitation. Nonetheless, these studies lend optimism to the efforts at managing this complex condition.

Management of NTDs

There is a growing optimism that NTDs can be controlled, prevented, and possibly eliminated using effective and feasible solutions. Recent years have witnessed an increasing commitment by the governmental and non-governmental donors in funding the control of NTDs. The current strategy for integrated control is preventive chemotherapy using the available drugs.^[9] Therefore, the major funding focuses almost exclusively on the contribution of pharmaceutical companies. Although such initiatives open up a window of opportunity to address these diseases, the approach is myopic and the benefits likely to be short-lived. Consequently, substantial investments in research and development are urgently needed to develop new-generation control tools and strategies for their improved use.^[10] Sustainability should be ensured through integration into the primary healthcare system with an emphasis on intersectoral co-ordination, including clean water supply, hygiene and sanitation, and vector management.^[11]

Are NTDs and Spatial Neglect Really Different?

NTDs and Spatial neglect may appear to stand poles apart. The risk factors for stroke are well-defined, including hypertension, cardiac disease, dyslipidemia, and smoking. Yet, many strokes occur in patients without any of these risk factors, especially in developing countries. Stroke also appears to occur at a younger age in the developing world. Thus, there has been an interest in identifying additional modifiable risk factors for stroke. Infectious etiologies are likely to contribute to stroke risk in the developing world. Evidence suggests that acute infections may act as a trigger for stroke.^[12] Increased levels of C-reactive protein, pro-inflammatory cytokines, and other acute-phase reactants in acute systemic infections may contribute to a pro-coagulant state by elevating levels of fibrinogen; factors VII, VIII, and XII; and activating platelets.

It may, therefore, not be surprising that at least 3 NTDs- Chagas disease, neurocysticercosis, and schistosomiasis have been identified as risk factors for stroke (which causes spatial neglect).^[13-16] Chagasic cardiomyopathy is a neglected, frequently unrecognized, source of cardio-embolic stroke affecting about one-third of patients with the disease.^[17] The association between neurocysticercosis and stroke is greater among young and middle-aged patients.

Indeed, the distinctions between communicable and non-communicable may be quite blurred.^[18] Moreover, immigration and international travel have made many of these NTDs an issue of international concern^[19]- unrestricted to the tropics and a 'neglect' too formidable to ignore.

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