

PERCEPTION AND MEMORY

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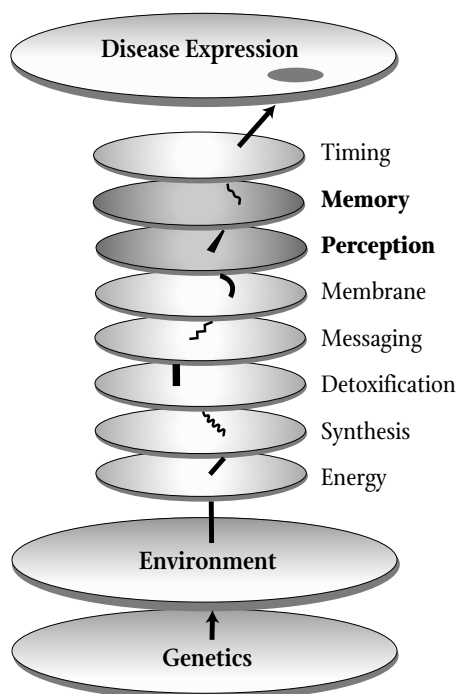
What makes people sensitive? Some people are sensitive because they come from sensitive families. Women are usually more sensitive than men. Tall, slender women with mitral valve prolapse are more sensitive than mesomorphic or endomorphic women. Children are more sensitive than adults. None of these distinctions tells us much about how they got that way. There seem to be many paths to sensitivity, with its good news and bad news. The good news is that sensitivity may bring with it a more acute perception of our surrounding world, so that in former times one might be appointed as the tribal scout, shaman, or food gatherer. The bad news is that sensitivity may make it awkward or impossible to sit next to someone wearing perfume in a theater, eat a “normal” diet, survive exposure to the taste of a peanut, or respond with equanimity to experiences or reminders of loss or invasion.

Some years ago, the harbor in Minimata, Japan, was poisoned, and many people were killed, deformed, or

sickened by mercury that entered the fishing waters from a factory that produced thimerosal, a preservative that is still widely used in medicines and cosmetics. Some affected individuals were exposed to lesser amounts or had lower tissue levels of mercury than their unaffected neighbors. First recognized in 1948, Pink disease, caused by exposure to mercury-containing teething powders, affected about one in a thousand infants who were exposed. Twenty-five percent of the sick babies died, but most of the exposed babies appeared unaffected. Survivors of the disease were later found to be at risk for bronchiectasis, autoimmune diseases, chemical sensitivities, and allergies. At the time, however, the disease definition was confined to a description of the common features of a syndrome that included pink nose, pink fingers, and pink toes. Minimata and Pink disease exemplify problems arising from the variable thresholds for expressing mischief caused by environmental exposure, and the variety of expression of that mischief in different individuals. These two toxicological examples show us that our notion of an average response may be troublesome when it comes to defining the borders of our concept of any disease “entity,” as well as our standards for judging toxicity. Allergy presents even greater extremes among people who may thrive or die from exposure to peanuts, for example. “Average” doesn’t really apply at all to allergy.

Toxicologists and epidemiologists must work within the notion of average because some such reference to a group is a necessary mooring for their craft. However, in whatever manner we navigate in a conceptual space of diagnostic groups, we clinicians are tethered to the notion that each patient is an individual whose pattern of sensitivity may be better understood from a functional, rather than a statistical, point of view. By *functional*, I am referring to questions that help organize the answers to three questions: “Sensitive to what?” “How sensitive?” and, “Why sensitive?”

The first two questions may be diagrammed in a scheme that helps me explain to my patients some ideas that help them join me in thinking about solving their problems (see Figure 1).



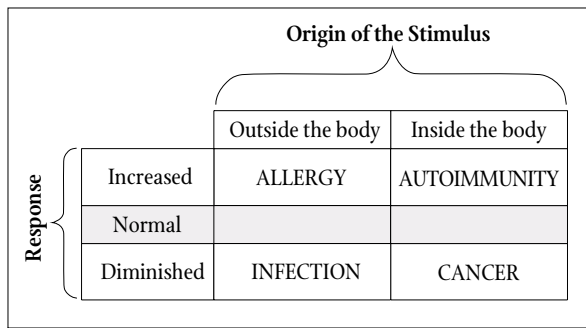


FIGURE 1
FOUR DEPARTURES FROM IMMUNOLOGICAL BALANCE

Examples of a heightened sensitivity to factors arising outside the body are in the realm of allergy. Allergy, loosely defined—without considering mechanism—is a sensitivity to something, such as food, pollen, dust, mold, chemical, or dander, that does not bother most people. Autoimmunity is the same sort of phenomenon in which the inappropriate response is heightened against antigens that are native to the body. Infection and cancer exemplify the results of a pathologically inadequate response to things that arise from their respective domains outside or inside the body. On the other hand, infection and cancer represent a deficit of immune perception or response with respect to malign organisms that enter us or arise among our own cells.

What use is served by having infection and cancer share the same conceptual axis when we usually find them in different chapters of books and separate departments of schools? Why would we join different offending agents such as allergens and germs simply because they share the global domain of “outside”?

The infection/cancer axis emerges as a clinical reality when we weigh the evidence that life experiences of loss are risk factors for both. Within the past 40 years, studies measuring immune vigilance have shown its decrease in disappointed individuals. The field of psychoneuroimmunology was borne from such studies, as well as from statistical confirmation of the perceptions of the 19th century, when grief was recognized as a predisposing factor for tuberculosis, and cancer was referred to as a “noble exit” for the defeated. The following excerpt from W.H. Auden’s poem, “Miss Gee,” shows us that the connection between loss and cancer is nothing new:

*She bicycled down to the doctor,
And rang the surgery bell;
“O, doctor, I’ve a pain inside me,
And I don’t feel very well.”*

*Doctor Thomas looked her over,
And then he looked some more;*

*Walked over to his wash-basin,
Said, “Why didn’t you come before?”*

*Doctor Thomas sat over his dinner,
Though his wife was waiting to ring,
Rolling his bread into pellets;
Said, “Cancer’s a funny thing.*

*“Nobody knows what the cause is,
Though some pretend they do;
It’s like some hidden assassin
Waiting to strike at you.*

*“Childless women get it.
And men when they retire;
It’s as if there had to be some outlet
For their foiled creative fire.”*

—From “Miss Gee” by W.H. Auden (1907–1973)

Loss tends to weaken the capacity for appropriate recognition of a menace to the self—an oversimplified concept/caricature that runs the risk of blaming victims for their own misfortune. The exercise of some measure of control over one’s fortune depends on a credible belief in one’s own power. When the blaming-the-victim question has arisen with my patients, I encourage the view that intention plays a role in healing. The benefit of assuming responsibility and exercising control in one’s own healing more than compensates for the transient hurt or guilt that comes with factoring intention—or inattention—as a possible causative dynamic. Once exposed, the implication of self-responsibility for past vulnerability can be a necessary step toward explicit forgiveness, as well as put the role of grief and loss into perspective along with genetic, environmental, and other causative factors.

The other conceptual axis of Figure 1, linking autoimmunity and allergy, has not been scrutinized in poetry, clinical observation, or published science, as have the consequences of loss and unresolved grief. I began to think about the link before I learned to think in terms of the diagram in Figure 1, which I first got from a seminar given by Allan Levin, MD, in the early 1980s. I changed my paradigm in the mid 1970s from prescription-pad medicine to patient-oriented strategies that focused on the two questions presented in a previous essay in this series (*IMCJ*. 2002/2003;1:1:14-15). The two questions—applicable to any chronically ill individual—deal with the possibility that a patient would benefit from discovering and treating an unmet need to either get the right amounts of nutrients, light, love, or rhythmic integration or to avoid or get rid of toxins or allergens.

For a few years in the late 1970s, I periodically migrated to California, where I met Linus Pauling, my teacher for the annual course given at Stanford University—"Basic Science for Clinicians." I also attended meetings of the orthomolecular physicians and began to relearn the biochemistry I had let slip from memory after passing my part I National Board exams in 1962. I then pursued a parallel quest to learn about what was then called "Clinical Ecology" from Theron Randolph, Larry Dickey, Bill Rea, Phyllis Saifer, and particularly Clyde Hawley in Livermore, California, whom I visited for mentoring.

I soon began to see patients for whom I was not the initiator of questions about the possibility that they might have an undiscovered sensitivity. Instead, they came knowing that they were multiply sensitive to food, pollen, chemicals, mold, dust, and dander. In such patients, the question of how they came to be so sensitive began to replace my interest in identifying the substances to which they were reactive. Naturally, I did not dare pose such a question until I had begun to learn a few answers from patients who exemplified extreme cases. My colleague, Leo Galland, helped me see the pattern exemplified by multiply-sensitive, tall, slender women with mitral valve prolapse whose various clinical problems responded to antifungal medications, low-carbohydrate diets, yeast and mold avoidance, and magnesium supplementation. As I got to know such patients and interviewed new ones, I learned to discuss invasive life events as follows:

Being intolerant of a very inconvenient variety of foods, perfumes, petrochemicals, dust and molds represents a state of hypersensitivity in which it would be more practical to find out why you are sensitive, and resolve the sensitivity, rather than go on avoiding so many foods and environmental exposures. There are several reasons why people become sensitive to things. We sometimes become sensitized through a heavy exposure while under stress. I have a patient, for example, who spent most of World War II in Rome, where, as a Religious Sister, she lived under stress in damp, moldy quarters and survived on moldy bread and food. She emerged sensitized to mold. So it is with chemical exposures, which have a way of sensitizing that is more difficult to undo than most other intolerances. Allergy desensitization, by one or another of various techniques, may undo sensitivities, but it may be a tall order for people who are sensitive to "everything."

A possible reason for becoming or staying sensitive is being out of balance. Discovering an imbalance is not such a tall order, at least to the extent of understanding its relevance. Let's say you are standing on one foot and collapse when I push you with my thumb. You might conclude that you are thumb-sensitive and need to avoid thumbs. On the other hand, if you improve your stance by planting both feet

on the floor, my thumb would no longer bother you. By the same token, discovering and treating an unmet need for zinc, magnesium, fatty acids, etc, may improve your biochemical balance and greatly diminish your sensitivity. Such an approach—finding unmet needs—is not a long shot, as people with ongoing problems frequently have unmet special needs. Digestive problems, chronic infection or imbalance in digestive flora, and adrenal insufficiency are other causes of sensitivity and are more practical to treat than avoiding "everything."

Another way people become sensitive is best understood by picturing what the immune system and central nervous system have in common. Your central nervous system is, right now, receiving signals of the world around you from your various senses. That is, your brain is partly a perceptual system and, as such, takes in the world. What does it do with what it takes in? It responds and remembers. Exactly how the brain remembers things is still a subject of research, but one thing is certain: memory is dependent, to some extent, on a feature of the brain that we all recognize—the presence of cells that are very long-lived and irreplaceable. In other words, the relative permanence of certain brain cells goes along with the permanence of memory, the function that we ascribe to the brain and not to your skin, your liver, your blood, or other tissues, where cells tend to live for only days or months, at the most. Is there, somewhere else in your body, a tissue with cells that persist from infancy to old age? It is not your blood, your liver, your skin, or even your bones that are constantly replacing their transient cells. It is not, for that matter, in any one place like the brain. The other population of enduring cells is scattered about in your immune system: a subset of lymphocytes, which are the managers and keepers of your immune memory.

What I am saying is that your immune system and your brain, however different they may be in shape and location, are the joint guardians of a single function—memory. Likewise, they are the two tissues in your body that share perceptual function. Your brain takes in and remembers the big world of your senses, including the inner sense of your self. Your immune system takes in and remembers the miniscule world of molecules associated with its whole sensory world: viruses, bacteria, fungi, parasites, foods, chemicals, dust, dander, and a complete inventory of your own tissues—your self. The scale, big or small, is different, but the functions of the brain and the immune system are identical: perception, memory, and reaction. The capacity that we call "recognition" is based on perception and memory. Recognition is a word we use with equal facility and accuracy in discussing what happens when we see a familiar face or make a second immune response to a germ.

During the past few decades, we have seen the development of a field of study of the ways in which the brain and immune system interact. Not too long ago, articles about such interactions carried a tone of surprise that interconnections

could exist between two completely different tissues of the body that had come to be regarded as systems separated in different textbook chapters and medical specialties. Considering that the brain and immune system are the joint guardians of perception and memory, one might wonder why there was any surprise. Nature would hardly devise the division of a common function without maintaining a functional unity, regardless of any anatomical distinctions that might be required.

When a person encounters an unwelcome sensitizing experience, such as my patient in a moldy cellar in Rome, you cannot just say to their immune system, “Forget it,” because the immune system’s job is memory—good and bad memory. If a person encounters an unwelcome invasive experience (eg, molestation, rape, invasive medical procedures such as tonsillectomy of yore on the kitchen table, a bad gynecological exam, or just not having the right privacy for one’s own needs) at the sensory level, one cannot just say to the brain, “Forget it,” because the brain’s job is memory. Given the joint participation of the immune system in perception and memory, it is not surprising that a bad invasive experience may spill over into the immune system, particularly if it is not given a vent or vessel by which to be resolved at the cognitive and emotional levels. By “vent,” I mean expressing oneself with words, and by “vessel,” I mean some creative enterprise that gives feelings a place to live.

In other words, there is a connection—no, a unity—of the central nervous system and the immune system that makes it entirely reasonable that a normal person might respond to an invasive life experience with a hypervigilant posture in the immune system. Whatever the theory, it is not unusual that individuals with severe multiple sensitivities have endured such privately held invasive life experiences that they have been deprived of the inherent benefit (emotional and immunological) of revealing their stories.

How many times have I seen tears as I finish my explanation of the possible origins of hypersensitivity, with a shift in the terminology to hypervigilance? The tears have often come with a sense of relief in finding, for the first time, a context in which to mention or describe past events without a silencing burden of shame or guilt or worry that problems will be dismissed as “all in your head.” Of course they are in your head, but not in the sense that may be regarded as condescending. Instead, they are in your head in a way that provides some traction toward healing by understanding the connections between, or better said, the unity of, the brain and the immune system.

Figure 2 diagrams what I try to communicate to my patients about one aspect of the workings of this unity. Loss may provoke a posture of paralysis of the self, and invasive life experiences may lead to a hypervigilant posture of the self. The diagram is a simplification of the col-

INVASIVE LIFE EXPERIENCES	Increased	} Response
LOSS/GRIEF	Diminished	

FIGURE 2
IMMUNE RESPONSES FOLLOWING INVASION AND LOSS

lective message from patients whose lives and illnesses constitute the kinds of extreme lessons that educate a physician. Sharing my map of the clinical landscape we navigate together, and allowing patients to consider these ideas in the context of more subtle circumstances, supports my job of helping my patients exercise as much control as possible over their health.

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