Rhythms and Periodicity in Health and Disease

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ABSTRACT

Biorhythms longer than the circadian that influence reactions of people and characterizes some diseases have not received much medical attention. The lay press describes cycles of 23, 28 and 33 days said to regulate moods, intellectual ability and efficiency, respectively. Whether or not three overlapping cycles actually regulate three different vague reactions may be questioned. Of interest, however, are rhythms of similar tempo which control mensis, cyclic changes in male hormones and a number of periodic diseases.

Although reports of more than 2500 cases of periodic diseases have been published, physicians generally are skeptical on the subject. Incorrect diagnosis leads to unnecessary testing, surgical exploration and medication.

Introduction

Inherent rhythms or cycles unrelated to external influences are facts of physiology and pathology. Regular oscillations pervade the animal kingdom to control the heartbeat, respiration, peristalsis, ambulation, reproduction as well as mental and ciliary activity. Apart from the well-studied circadian (about-a-day) rhythm, scant scientific attention is given to the pulsation of longer ones. According to Havelock-Ellis, men have expended infinite ingenuity in establishing remote cosmic cycles, but disdain the simpler [?] task of proving their own.

Physicians generally seem aversive to accept the principle that long inborn rhythms also underly certain diseases. The diseases are observed without reference to periodicity or to the obscure cause of their undulations. In contrast, lay persons and popular news media currently give much publicity to short and to long rhythms. Both conduce regularly fluctuant psychic, physiologic and pathologic disturbances.

Old Views

The ancients ascribed cycles of behavior and of illness to cosmic and lunar influences, hence the terms mensis and lunacy. Hippocrates divided recurrent diseases into seven-day periods, and an inborn biorhythm may have regulated the seven-day week before his time. Toynbee considered periods of withdrawal and return, ebb and flow as depicting the ancient Chinese yin and yang of static and dynamic influences. In 1852, Hahnemann observed hebdomadal (weekly) diseases recurrent every 7, 14 and 21 days. Twelve years later, Moore wrote "periodicity or the tendency of certain phenomena of life to recur at equal or nearly equal intervals is one of the curiosities of medical science," which it still is. Fliess in 1906
and Pfeffer in 1907 proposed the operation of mysterious rhythms that pulsate throughout life, dependent upon inherent bioclocks. Dérer regarded "concealed macroperiodicity" as operative every six or multiples of six days under central neural regulation. The first and almost only scientific studies on long biorhythms were begun by Richter in 1920. Bioclocks in cells seemed to control periodic psychoses and other repetitive diseases in remarkable hebdomadal tempo. Ask-Upmark's concept of the biologic week, also bearing on periodic diseases, accords with the Hippocratic dictum. So far, a plausible theory to account for biorhythmic disorders proposes periodic excitations in the hypothalamus by a feed-back agency with autonomic mediation to genetically reactive tissues or organs.

Current Interest

Cycles of 23, 28 and 33 days, like Fliess' 23 and 28 day ones, associated with minor psychic and physical disturbances, are discussed in news media and in books. Rhythm charts for personally recording and predicting events are advertised for sale. Perhaps a habit will follow of taking a stimulant during the slump and a sedative at the crest of the waves for stabilization. Some scientists are said to consider much of this as fraudulent. The matter was regarded as astrologic and without research to establish its truth. Credibility, indeed, is strained by ascribing closely related, overlapping, physical, emotional and intellectual oscillations to the influence of three, separate-running, respective rhythms (fig 1). Yet, there is some substance to it. Sensitive persons may be disturbed by alternant changes; others are unaware of them. The effect of such rhythms if present, excepting mensis, may be obscured by the exigencies of life and by mensis of similar periodicity.

Surprisingly, however, the tempo of such cycles, so similar to those inciting periodic diseases, to Pel-Ebstein fever of lymphomas and normal hormonal cycles, go unnoticed. They may be related despite the difference of the 23, 28, 33 day and Dérer's 6-day cycles.
from those of the 7, 14, 21, 28 day recurrences of periodic diseases (figures 2 and 3). The discordance may depend on counting the number of days elapsing between vague disturbances instead of the dates from onsets to onsets. Yet when a patient superimposed his periodic episodes recurrent about every 23 days, they antedated, coincided with or postdated the charted physical, emotional and intellectual fluctuations. Distinct episodes of periodic diseases and their measurable features make dating precise, especially when registered on a periodogram as in figures 2 and 3.

Periodic Diseases

Similar to the doubts expressed about the cycles referred to previously, and in contrast to lay interest in cycles, are the skepticism and apparent lack of medical concern toward a group of heritable, disabling diseases that recur episodically for life in otherwise normal people. Eyebrows rise at the concept of biorhythmic regulation of disparate periodic entities often at seven- or multiples of seven-day intervals (figures 2 and 3). As a result, they often are unrecognized as such for years before a diagnosis is made.

More than 2500 cases have been recorded. Some entities were known in the last century under various names, one of them as Kalendersymptome. They and others were gathered in a 1963 monograph as distinctive periodic diseases. Because all have heredity, periodicity, similar autonomic reactions and duration in common, they were grouped nosologically according to their dominant feature as periodic diseases; namely, periodic fever, peritonitis, edema (hereditary angioedema), synoviosis (intermittent hydarthrosis), neutropenia, psychoses, and others. Periodic neutropenia at 12-day intervals affects gray Collie dogs. The entities are not manifestations of well-known basic illnesses made overt by a biorhythm. They are in a class apart arising as such, sui generis, according to genetic influence.

After the prediction by this author of the concurrence of symptomless periodic changes in some members of afflicted families, Morley demonstrated 21-day cycles of neutropenia not only in symptom-free genetic relatives, but also in healthy persons in normal families. Medication may suppress episodes of illness; however, if treatment stops, serial episodes emerge on time, indicating the persistence of an undisturbed underlying bioclock. Eight to 10 day cycles of oestrone excretion, weekly cycles of 17-ketosteroids, and changes in the amounts of plasma testosterone clustering around 20 to 22 days occur in healthy men. These facts exemplify "concealed macroperiodicity" and implicate the omnipresence of biorhythms.

All of this knowledge does not seem to penetrate clinical medicine, probably be-
cause so little is known about the underlying mechanisms or how to approach the problem. There seems to be “an inability of contemporary opinion to distinguish between a new [or old] idea and nonsense.”

“Disease,” wrote Charcot, “is very old and nothing about it has changed. It is we who change as we learn to recognize what was formerly imperceptible.”

Regardless of skepticism and considering all theories, conjectures and facts about biorhythms offered by so many for so long, there is something to it. According to Karl Hamner, “The biologic clock is, perhaps, one of the greatest challenges in all of present-day biology.” Biorhythms do play a role in health and disease. Cognizance of them and, especially, of periodic diseases avoids unnecessary medication, surgery, apprehension and expense for patients.

References