

Pineal Gland: A Cognitive Advantage for Africans Thursday, 17 January 2008 15:15 Bernie Douglas

The pineal gland is responsible for the production of melatonin, a hormone that is secreted in response to darkness, and is also the site in the brain where the highest levels of Serotonin can be found (Sun et al, 2001). In the pineal, 5-HT (Serotonin) concentration displays a remarkable diurnal pattern, with day levels much higher than night levels. Serotonin plays an important role in sleep, perception, memory, cardiovascular activity, respiratory activity, motor output, sensory and neuroendocrine function.

By Bernie Douglas (January 17, 2008)

Racial differences have been noted in the rate of pineal calcification as seen in plain skull radiographs. In Caucasians, calcified pineal is visualized in about 50% of adult skull radiographs after the age of 40 years (Wurtman et al, 1964); other scholars argue that Caucasians, in general, may have rates of pineal gland calcification as high as 60-80% (King, 2001). Murphy (1968) reported a radiological pineal calcification rate of 2% from Uganda, while Daramola and Olowu (1972) in Lagos, Nigeria found a rate of 5%. Adeloje and Felson (1974) found that calcified pineal was twice as common in White Americans as in Blacks in the same city, strengthening a suspicion that there may be a true racial difference with respect to this apparatus. In India a frequency of 13.6% was found (Pande et al, 1984). Calcified pineal gland is a common finding in plain skull radiographs and its value in identifying the midline is still complementary to modern neuroradiological imaging.

There is a surprising rarity of calcified pineal gland on skull roentgenograms in West Africans. Adeloje and Odeku (1967) working from a hospital where an average of about 2,000 skull roentgenographic examinations were done every year, encountered less than 10 cases of roentgenologically visible calcified pineal gland in the Neurosurgery unit during a period of 10 years. In the tasks of daily life, calcification in the pineal gland affects our brain's ability to function. Calcification of the pineal gland is shown to be closely related to defective sense of direction (Bayliss et al, 1985). In a tricentre prospective study of 750 patients lateral skull radiographs showed that 394 had calcified pineal glands. Sense of direction was assessed by subjective questioning and objective testing and the results noted on a scale of 0-10 (where 10 equals perfect sense of direction). The average score for the 394 patients with pineal gland calcification was 3.7 (range 0-8), whereas the 356 patients without pineal gland calcification had an average score of 7.6 (range 2-10). This difference was highly significant (p less than 0.01) (Bayliss et al, 1985). Also, the effects of disturbed sleep and memory are well documented.

The Pineal Gland looks like a miniature pine cone and is situated in the middle of the brain beneath the two brain halves, surrounded by the ventricles, under the roof of the corpus callosum (cross-beam connecting the 2 brain halves). This active organ has, together with the Pituitary Gland, the next highest blood circulation after the kidneys. The pineal gland is responsible for the production of melatonin, a hormone that is secreted in response to darkness, and is also the site in the brain where the highest levels of Serotonin can be found (Sun et al, 2001). In the pineal, 5-HT (Serotonin) concentration displays a remarkable diurnal pattern, with day levels much higher than night levels. Serotonin plays an important role in sleep, perception, memory, cardiovascular activity, respiratory activity, motor output, sensory and neuroendocrine function.

One study has shown a reciprocal relationship between the pineal and pituitary gland so that if the pineal is impaired, it affects the pituitary (Karasek and Reiter, 1982). This has a whole cascade of effects on the other glands and hormone production. The pituitary gland is an endocrine gland located at the base of the brain, and produces hormones, such as growth hormone, luteinizing hormone, follicle stimulating hormone and thyroid stimulating hormone.

Pineal indolamine (e.g. Melatonin/Serotonin) and peptide hormones influence immune functions. Melatonin, in particular, increases immune memory while T-dependent antigene immunization stimulates antibody production. According to Maestroni (1993), in an article published in the Journal of Pineal Research a tight physiological link between the pineal gland and the immune system is emerging that might reflect the evolutionary connection between self-recognition and reproduction. He goes further, mentioning that Pinealectomy or other experimental methods which inhibit melatonin synthesis and secretion induce a state of immunodepression which is counteracted by melatonin. In general, melatonin appears to have an immunoenhancing effect. An interesting observation is the apparent protection from autoimmune diseases in areas of West Africa and especially in places where malaria is a problem (Greenwood, 1968).

Scholars believe the reduction in melatonin with age may be contributory to aging and the onset of age-related diseases. This theory is based on the observation that melatonin is the most potent hydroxyl radical scavenger thus far discovered (Reiter, 1995). Prominent theories of aging attributes the rate of aging to accumulated free radical damage (Proctor, 1989; Reiter, 1995), and as Caucasians have higher rates of pineal calcification, which produces melatonin which is a vital free radical scavenger, some suspect that people of European descent may actually age faster than those from other continents.

Pineal gland calcification has also been implicated in the onset of Multiple sclerosis. Multiple Sclerosis is an autoimmune disease that affects the central nervous system (CNS). The CNS consists of the brain, spinal cord, and the optic nerves. Neuroradiological research has shown the pineal gland to be involved in the pathophysiology of Multiple Sclerosis. In a 1991 study by Sandyk R, and Awerbuch G.I published in the "International Journal of Neuroscience", it was shown that Pineal Calcification was found in 100 % of MS patients. The strikingly high prevalence of pineal calcification in Multiple sclerosis provides indirect support for an association between MS and abnormalities of the pineal gland (Sandyk and Awerbuch, 1991). Multiple Sclerosis tends to affect Caucasians disproportionately, and is nearly unheard of in Africa and is rare among African Americans. A high prevalence of pineal calcification has also been linked to bipolar disorder.

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