Why Schizophrenics Smoke but Have a Lower Incidence of Lung Cancer: Implications for the Treatment of Both Disorders

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Smoking and Schizophrenics

Smoking is an extremely common habit amongst schizophrenics.[1] In the USA, some 90 per cent smoke compared to only 33 per cent of the general public.[2-3] Masterson and O'Shea[4] compared cigarette smoking prevalence of Dublin's schizophrenic in-patients with that of the general pubic. They concluded that while 92 percent of male and 82 percent of female Irish schizophrenics smoked, prevalence was only 49 percent and 36 percent respectively for the general public. Every available study on the topic of which the authors are aware, therefore, suggests the schizophrenics are much more likely to smoke than are other members of the population. Not only do schizophrenics typically smoke, but they tend to live more frequently in selenium deficient regions.[5-6] As a consequence, they often lack adequate glutathione peroxidase, the selenoenzyme which forms a key component in the body's defences against smoking-induced free radical damage.[7]

Cancer and Schizophrenics

Under these circumstances, logic would seem to dictate an extremely high cancer incidence amongst schizophrenics. The available evidence, however, tends to suggest that the reverse may be true.[8] Indeed, as early as 1893, Snow[9] remarked that psychiatric patients were immune to cancer. While some researchers have failed to demonstrate any significant correlations between the two groups of disorders,[10-11] others have confirmed a lower than anticipated incidence of cancer in psychiatric patients.[12]

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In 1979, Rice[13] claimed that bronchogenic carcinoma had never been recorded in long-stay chronic schizophrenic in-patients, despite their elevated use of tobacco. His observation was further confirmed by Craig and Lin[14] who documented a depressed lung cancer incidence in schizophrenic in-patients, despite their tendency to smoke heavily.

Masterson and O'Shea[4] examined the causes of death of 122 recently deceased chronic schizophrenic in-patients of St. Brendan's Hospital in Dublin, a large psychiatric institution. They concluded the proportional mortality rates for all malignancies were not significantly lower in schizophrenics than in the general population, but that there appeared to be a significant absence of death from cancer of the gastrointestinal tract.

Probably the most comprehensive study of the incidence of cancer amongst schizophrenics was carried out by Gulbinat and coworkers[8] who studied the incidence of malignant neoplasms amongst schizophrenics in Aarhus, Denmark; Honolulu, Hawaii; and Nagasaki, Japan and compared it with that of the local general population. Interestingly, while relative cancer risk was generally much lower amongst Caucasian schizophrenics, it was elevated in both Hawaii and Japan amongst those of Japanese decent. Of particular interest to this study were the highly depressed relative risks of lung cancer during the period 1957 to 1980 amongst Danish male (rr= 0.38) and female (rr= 0.33) schizophrenics. Nothing was known of the smoking habits of these patients.

One of the current authors (Hoffer) has treated 780 patients diagnosed with a wide spectrum of cancer types and sites. Only five of these cancer patients also suffered

from schizophrenia. Three had cancer of the breast, another lymphoma and the fifth had cancer of the thyroid. In every case, response to treatment was excellent and all are still alive, with a survival that currently averages six years. In addition, Dr. Hoffer has treated 4,000 schizophrenic patients since 1952, some 500 of whom are currently receiving treatment. Only one percent, the five previously mentioned, also have had cancer.[15-16]

The evidence strongly suggests, therefore, that schizophrenics smoke far more than the general public and that, in Caucasians at least, lung cancer incidence is unusually depressed. There appear to be two possible explanations for this strange anomaly. Either, a large majority of schizophrenics are taking medication which, as a side-effect, inhibits lung cancer development. Or, there is some, probably biochemical, aspect of schizophrenia that reduces susceptibility to lung cancer. The first alternative seems the least likely, since there have been numerous changes in medication since this phenomenon was first mentioned by Snow,[9] confirmed by Rice[13] in 1979 and reconfirmed by Gulbinat and colleagues[8] in 1992. In addition, the low lung cancer incidence among schizophrenics has been recorded by both conventional physicians who treat patients with pharmaceuticals[8] and by orthomolecular doctors who emphasize the benefits of vitamins and minerals in their protocols.[15-16] It appears most likely, therefore, that the probable depressed incidence of lung cancer among schizophrenics must be related to the biochemistry of the illness itself.

The Adrenochrome Theory of Schizophrenia

Schizophrenics typically display abnormally high levels of the hallucinogen adrenochrome in their urine.[15] This is naturally created by the oxidation of adrenaline. For decades, one of the authors (Hoffer) has successfully treated schizophrenics with nutrients which are designed to lower such elevated adrenochrome levels. This goal can be achieved by the use of the natural methyl acceptors thiamine (vitamin B_1), riboflavin (vitamin B_2), niacin(vitamin B_3), and ubiquinone (Coenzyme Q_{10}). Niacin is usually the treatment of choice. The oxidation of adrenaline to adrenochrome occurs in two steps. Initially, adrenaline loses one electron to form oxidized adrenaline, a highly reactive molecule. In the presence of nicotinamide adenine dinucleotide, which is created in both oxidized (NAD) and reduced forms (NADH) from niacin, oxidized adrenaline recaptures one electron to reform adrenaline. If NAD and NADH are in short supply, however, oxidized adrenaline loses another electron and is converted to adrenochrome. This second reaction is not reversible. Adrenochrome, therefore, cannot be converted back to adrenaline. This explains why many schizophrenics display depressed levels of adrenaline and elevated levels of adrenochrome. Foster[17] has further argued that schizophrenics are also typically very deficient in glutathione peroxidase because it acts as a natural defence against free radicals. It was further suggested that, when this selenoenzyme is used to protect against oxidation, its stores are likely to be depressed. In schizophrenics this, in turn, is thought to result in excessive oxidation of the essential fatty acids and hence failure of formation and action of certain crucial prostaglandins.[18] This relationship explains why schizophrenia is more prevalent in low selenium environments.[5-6] It is possible that such essential fatty acid and associated prostaglandin deficiencies may account for the brain atrophy and increased ventricle-brain ratios identified in chronic schizophrenics by Buckman and co-workers.[7] In summary, evidence suggests that the excessive production of adrenochrome by schizophrenics creates a cascade of abnormal biochemical responses that ultimately cause physical damage to the brains of long-term, chronic patients.

Why Schizophrenics Smoke

If the adrenochrome theory of schizophrenia is correct, many individuals suffering from the disorder are adrenaline deficient, a state which must be related to some of the symptoms displayed. It has been established by animal experiments[19-20] that nicotine increases adrenaline turnover in the hypothalamus, especially the median eminence. This nicotine-adrenaline relationship appears to have a therapeutic role in several neuropsychiatric disorders including depression, Tourette's syndrome and schizophrenia.[21] It is suggested, therefore, that schizophrenics smoke as a form of self-medication. Over the short-term, elevated nicotine helps to alleviate the adverse impacts of the shortage of adrenaline they experience because of the excessive oxidation of this compound to adrenochrome.

Depressed Cancer Incidence Among Schizophrenics

In 1970, Yamafuji and co-workers[22] argued that noradrenaline or adrenaline had antitumour properties. However, the evidence just presented suggests that it is not adrenaline but its oxidation product adrenochrome, or derivative(s) from it, which is most likely to protect against cancer. There is experimental evidence that appears to support this possibility. Parnate, an antidepressant, is an amine blocker that, therefore, encourages the production of adrenochrome in patients receiving it. One of the authors (Hoffer), a practising psychiatrist, has seen several patients become psychotic whilst taking this drug. One of these was a 14-year-old male with a brain tumour which produced fluid requiring monthly drainage. The patient has remained well for about five years since his parnate-induced psychotic episode. In addition, a new product called Intradose which contains cysplatin and epinephrine (adrenaline) is currently being tested as a treatment for liver cancer. This gel is injected directly into tumour masses. Cysplatin is a very powerful oxidant which will almost certainly rapidly convert the adrenaline to adrenochrome in the liver. To date 29 cases of primary liver cancer have been treated, 12 have responded positively (41 percent). Of the 12 positive outcomes, six have been complete cancer remissions.

Conclusions

The available evidence suggests that schizophrenics smoke to temporarily relieve the adverse symptoms associated with adrenaline deficiency. They are adrenaline deficient because this compound is being converted abnormally rapidly to adrenochrome, possibly because of an allergic reaction to latex.[17] Elevated adrenochrome is double-edged sword. On the one hand it appears to protect against cancer, while on the other it promotes psychosis. This suggests that the treatment of schizophrenia requires the prescription of natural methyl acceptors such as niacin (vitamin B_3) and ubiquinones (coenzyme Q_{10}) to reduce adrenochrome production. While conversely, the successful treatment of many cancers may ultimately require the prescription of substances that cause abnormally high adrenochrome levels and temporary psychosis.

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