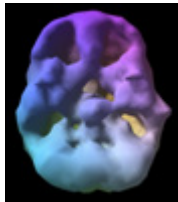


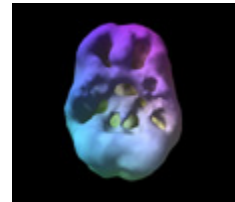
BRAIN POLLUTION IMAGES OF ALCOHOL AND DRUG ABUSE

Marijuana

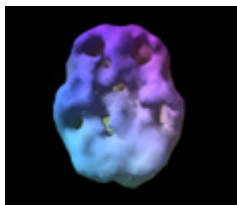
Marijuana usage typically causes decreased activity in the posterior temporal lobes bilaterally. The damage can be mild or severe, depending on how long a person used, how much use occurred, what other substances were used (nicotine is a powerful vasoconstrictor) and how vulnerable a particular brain is.



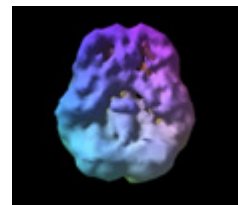
18 y/o - 3 year history of 4 x week use
underside surface view
decreased pfc and temporal lobe activity



16 y/o -- 2 year history of daily abuse
underside surface view
prefrontal and temporal lobe activity

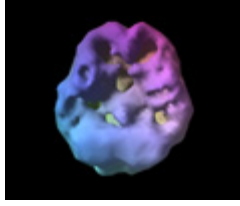


38 y/o -- 12 years of daily use
underside surface view
decreased pfc and temporal lobe activity

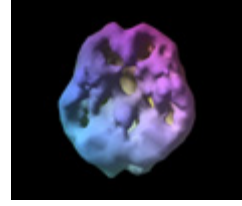


28 y/o -- 10 years of mostly weekend use
underside surface view
decreased pfc and temporal lobe activity

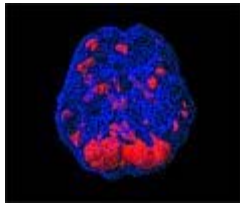
Off and On Marijuana



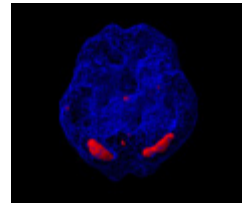
underside surface view, off THC
decreased pfc and temporal lobe activity



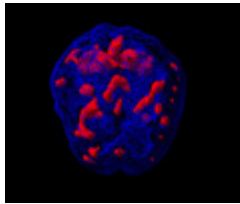
underside surface view, on THC
severe overall decreased activity



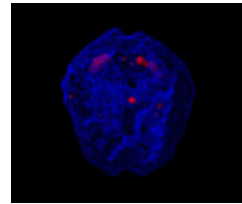
underside active view, off THC
increased deep left temporal lobe activity



underside active view, on THC
overall calming of activity



top-down active view, off THC
patchy increased uptake



top-down active view, on THC
overall calming of activity

This 57-year-old physician had abused marijuana for 30 years. We performed this SPECT series because he had been unable to stop using without feeling very angry, irritable, agitated and anxious.

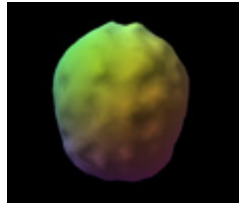
The first study (those images in the right column) was performed after he came to the clinic intoxicated from 3 straight days of heavy usage. The second study (those images in the left column) was performed after he abstained from marijuana usage for 1 month.

Notice the study without marijuana shows decreased temporal lobe activity (likely from the chronic marijuana usage), but also patchy increased uptake, especially increased activity in the deep left temporal lobe (often associated with anger, irritability and anxiety).

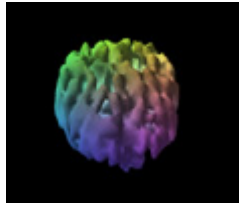
The study with heavy marijuana usage shows marked overall decreased activity, especially in the prefrontal cortex and temporal lobes (associated with attention, memory and motivational problems) but also there is a decrease in the overactive areas noted in the "off marijuana" study.

This scan series argues for the possibility of "self-medication," but unfortunately this medication has the side effect of causing the potential for long term damage to his brain.

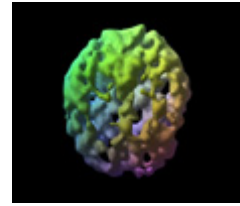
Heroin & Methadone



Normal view
top down surface view
full, symmetrical activity

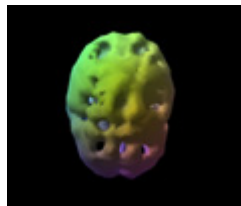


39 y/o -- 25 yrs of frequent heroin use
front on surface view
marked overall decreased activity

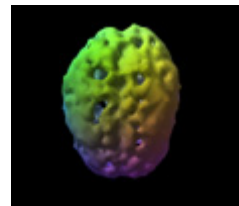


40 y/o, 7 yrs on methadone
heroin 10 yrs prior
top down surface view
marked decreased overall activity

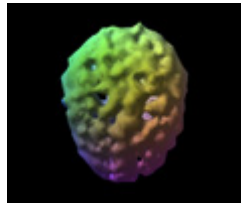
Cocaine & Methamphetamine



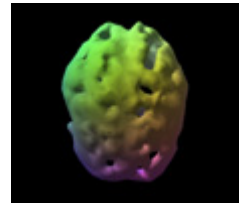
52 y/o - 28 yr hx frequent meth use
top down surface view
multiple holes across cortical surface



24 y/o -- 2 yr hx of frequent cocaine use
top down surface view
multiple holes across cortical surface



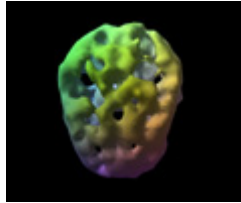
28 y/o - 8 yrs heavy meth use
front on surface view
marked overall decreased activity



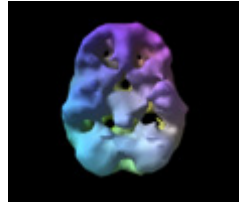
36 y/o, 10 years frequent meth
top down surface view
multiple holes across cortical surface

Alcohol

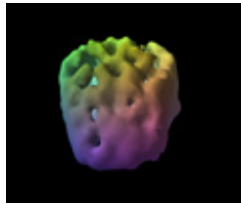
38 y/o - 17 years of heavy weekend use



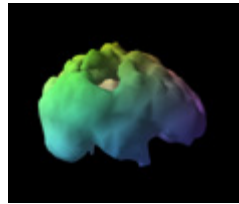
top-down surface view



underside surface view



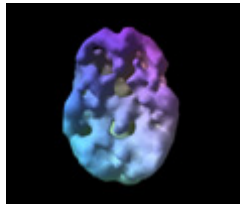
front on surface view



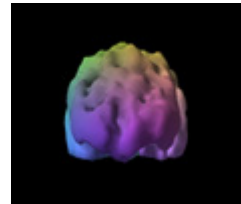
right side surface view

marked overall decreased activity

Alcohol

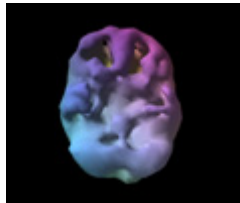


underside surface view

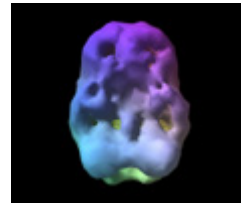


front on surface view

48 y/o -- 22 years of daily use with history of past head injury
marked scalloping overall decreased activity



44 y/o -- 18 years of daily use
underside surface view
marked overall decreased activity

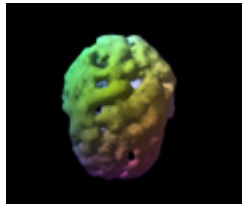


45 y/o -- 25 year history of daily abuse
underside surface view
marked overall decreased activity

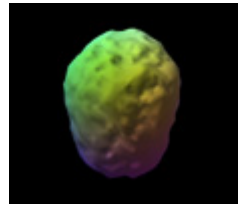
Hope for Healing

Alcohol, Cocaine & Meth

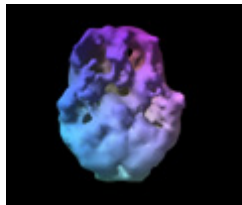
On and Off Drugs



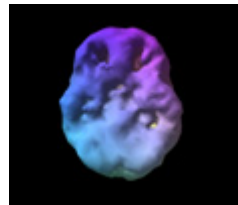
top-down surface view
during substance abuse



top-down surface view
a year drug and alcohol free



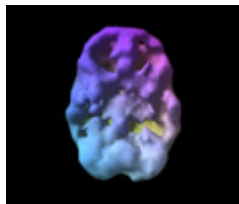
underside surface view
during substance abuse



underside surface view
a year drug and alcohol free

notice the overall holes and shriveled appearance during abuse and marked improvement with abstinence

Heavy Nicotine & Caffeine Abuse 45 y/o -- 27 year history of heavy use 3 packs of cigarettes and 3 pots of coffee daily



undersurface view
marked decreased overall activity

Medical Disclaimer:

The information on this web site is for general informational purposes only. It is not a substitute for a medical evaluation. If you feel that medical interventions are necessary, please check with your physician.

Scientific literature on the physiological effects of drugs and alcohol on the brain demonstrated a number of abnormalities in substance abusers in brain areas known to be involved in behavior, such as the frontal and temporal lobes. There tends to be several similarities seen among classes of abused drugs.

The most common similarity among drug and alcohol abusers is that the brain has an overall toxic look, less active, more shriveled, and overall less healthy.

A "scalloping effect" is common amongst drug abusing brains. Normal brain patterns show smooth activity across the cortical surface. Scalloping is a wavy, rough sea-like look on the brain's surface.

These findings tend to improve with abstinence, although long term use has been associated with continued deficits seen years after abstinence.

Studies help break through the denial that often accompanies substance abuse. When one is faced with the visual facts of the abnormal cerebral perfusion it is hard to remain in denial and help evaluate if there is an underlying neuropsychiatric condition that needs treatment.