HEADACHE FROM TOBACCO, DRUGS, ETC.*

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For the many years that tobacco has been used, since its active alkaloid nicotine was recognized as a deadly poison, it was taken for granted that any disturbance in a smoker, which seemed to be possible to trace to the effect of tobacco itself, must be due to the effect of nicotine.

All the writings in our text books, and all the tobacco literature of the past have been based upon that assumption. In recent years evidence has been accumulating which finally seems convincing, that as far as smoking the tobacco is concerned, the deleterious effect on the human organism is more due to some element in the tobacco, other than nicotine, than to the nicotine itself.

There is no question that the blood pressure rises during smoking, and in animal experimentation, small amounts of nicotine cause a rise in the blood pressure, and the coronary, pulmonary, and hepatic vessels are constricted thereby.

The work of Sulzberger and Harkavy, and others, has produced very strong evidence that the clinical effects of tobacco are due to hypersensitization by some substance in the tobacco itself, more than in the smoke, and it seems equally true from their work, that it is not the nicotine which produces all the injurious effects produced by tobacco.

Like all allergins, this unknown substance is inert to normal people, but to any hypersensitized person it may be exceedingly injurious, and the injury seems to be in quantitative relation to the sensitiveness of the individual. Many people smoke practically all their lives with no apparent injurious effects; others find themselves sensitive,

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and have to cease the use of tobacco; others go on, as in the cases of thrombo-angiitis obliterans, in which there is very definite evidence, from the work of these investigators, that it is due to the tobacco, and find themselves crippled for life as a result of the use of tobacco, and their personal sensitization. There seems to be no question that in many examples of allergy, of which tobacco is merely one, the substance taken into the body, by whatever channel, whether it is absorbed by solution of the alkaline saliva from the tobacco in the mouth in cigars and cigarettes, whether it will be found to be due to some substance in the smoke, or in whatever manner it may be introduced, it can go into the circulation, but it has a very strong predilection for some one element in the bodily structure. This point of predilection in tobacco is the vascular system, and both changes in the vessels themselves are present as well as the production of changes in the surrounding tissues from the resulting irregular circulation, and irregularity of blood supply. It is undoubtedly true that the circulating allergin can cause repeated reactions in small circumscribed areas of blood vessels, and these may be found to be in any area in the body.

This is not the place to discuss the various effects of tobacco on the circulatory system, or to discuss its effects in angina, or in thrombo-angiitis obliterans, and other arterial diseases, but it is here a question of the possibility of headache produced by tobacco, and from whence this pain comes.

Compared with the vast number of tobacco smokers that one meets, headache from tobacco is not a wide spread affliction, and tobacco sensitiveness in people in general seems to be somewhere between 20 per cent and 10 per cent, judging from the limited figures so far acquired.

Headache in general has seemed to me to be due to a contraction of the blood vessels in the skin, and a localized contraction, in which the uncontracted arterioles supplying the smaller vessels endeavor to drive a mass of blood through the contracted smaller tubes, causing pain by

pressure on the nerves through this action; or else, if we accept the idea of the allergic action as seen in the urticarial type of allergy, it is due to a pressure of the circulation where there is an actual exudation in the tissues, which produces pressure on the nerves.

There is no question but that smoking raises blood pressure, that is a clinical observation of many years standing long before allergy was conceived to be the basic cause of tobacco poisoning. This rise of blood pressure is produced by stimulation of the sympathetic side of the autonomic nervous system, causing the vasomotor contraction which these nerves control. It has already been demonstrated by Heymans, Bouckert and Regniers that the blood pressure is chiefly controlled by the nervous mechanism of the carotid sinus at the dilation of the internal carotid, where the common carotid separates into the internal and external vessels, and at this junction there is a small so-called gland, or glomerulus, which is not a secretory gland, but is a vascular organ abundantly supplied with nerves from the sympathetic and vagus systems, especially by branches of the glossopharyngeal nerve. Minute amounts of substances passing through the glomerulus, such as very small amounts of nicotine, so small that they are inert if injected into the blood stream, above the gland, will cause a very marked reaction in the rise of blood pressure. It may be this factor which influences the clinical rise of the blood pressure more than even the excessive sensitization which the unknown substance in the tobacco itself produces. The rise of blood pressure is universal in smokers, and I have seen men with normally markedly low blood pressure, have during the years of their smoking, abnormally high pressures, which again fell to the previous hypotension after the cessation of their tobacco, and remained as before at normal hypotension.

Whatever substance may cause the allergic condition, whatever substance it may be that produces the increased vascular tension, it is a repeated dosage many times a day which finally brings about the changes producing the headache, or producing whatever other symptoms there may be.

The chronic action of tobacco on arterioles may change the vessel wall itself, and headache not occur until this change is established, or the headache may come from the acute local spasm of the vessels, and act as an acute poisoning, occurring only with excess of smoking, or become a chronic headache after many years, and be intensely severe. The headache may only accompany an amount of smoking excessive for that individual. Functional changes produced by tobacco have the same characteristics that other allergic manifestations possess; if the offending poison is withdrawn from the body, the symptoms cease, if then resumed, they again reappear.

How frequently tobacco headaches occur it is impossible to say; excessive smoking will produce them in most people; a person smoking too much at night will wake up with a headache in the morning. Caffein in a good strong dose will dilate the vessels, and the morning cup of coffee will relieve the headache, and usually, enough coffee will be taken to see that it does.

Many headaches which are laid to smoking are unquestionably due to other substances, they may be due to other solids or fluids taken the night before, and are blamed on the tobacco. But headache from tobacco does occur, and is dependent for its occurrence on the quantity taken, and on the sensitiveness of the person indulging in it. We cannot gauge these two factors, we cannot say how frequent it is. It is quickly evident in some, it is never evident at all in others. It may be produced by the nicotine, it may have nothing to do with the nicotine, we do not know; it may be produced by an unknown substance in the tobacco absorbed by the alkaline saliva from the moistened tobacco in the mouth; it may possibly be in the tobacco smoke, but to-day this seems doubtful.

The degree of the tobacco headache rests with the individual, and his idiosyncrasy towards sensitization from the use of the tobacco. Furthermore an individual may be sensitive to only one kind of tobacco, not to other kinds.

The relief and cure of this form of headache rests also with the individual. He may smoke and suffer from it, or leave tobacco alone, and be free, or he may smoke from boyhood till doddering old age, and never have a headache from his smoking.

Headaches from other substances used in daily life as food or drink are not uncommon. Coffee and tea cause headaches in some persons, in others not. Caffein in small doses below 20 mgm. per kilo body weight raises blood pressure, but double this dosage and the vessels are dilated.

Most drugs in use to-day do not give headaches, except the group of hypnotics which are so excessively used leave the benumbed and poisoned cerebral tissues still affected after sleep has ceased, and the hypnotic must be followed by an analgesic to obtain relief. The hypnotic habit like other drug habits, expresses the desire for freedom from the worried wear and tear of life, and does not enter into discussion here.

Sugar gives headaches in some individuals if amounts excessive for that organism are ingested. Other foods, as milk or eggs, and many other substances used as food, produce headaches in individuals hypersensitive to them. The mechanism seems to be the same disturbance of the normal balance between the sympathetic and parasympathetic portions of the autonomic nervous system. The idiosyncrasies of this class of substances is best brought out in the widely increasing literature of Allergy, and is too broad a subject for discussion at this time.