Reactions to chemical fumes and electromagnetic fields are not simply nocebo effects

Several studies exposed people with multiple chemical sensitivities (MCS) or electrical hypersensitivities (EHS) to their triggers. In some studies they reported feeling sick, even when exposed to "nothing." These nocebo responses are often taken as "proof" the disease is psychosomatic. It is not that simple.

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Provocation studies

In a provocation study each test person is exposed to an active challenge, such as chemical fumes or electromagnetic radiation. They are usually also exposed to "nothing," i.e. a sham exposure, a placebo. The test persons usually don't know whether they are exposed or not.

When the test person can't reliably tell the difference between active and blank exposures, some scientists consider that "proof" that MCS and EHS are some sort of mental illness (Das Munshi 2006; Rubin 2011). They overlook several very important things.

Doing these provocation studies appears simple, but they are actually quite difficult to do well. A great many of these studies do not adequately control the environment, so the test subjects may get symptoms from other causes. These symptoms are then falsely attributed to the person's imagination.

In many MCS studies, the active challenge has a smell to it, while fresh air does not. To remove this obvious clue, the scientists often add some sort of scent that is considered non-toxic, such as eucalyptus. But now the "fresh air" isn't fresh anymore, and some people can get sick from it. This problem is often overlooked, and they just assume it's an emotional response.

In nearly all EHS studies, the scientists did not check for all the electromagnetic radiation that could be present in the test room, which can cause symptoms. At most, they used a single instrument to just check one frequency band.

These are just two of the major errors seen in most of the provocation studies. This is a large topic that we will not cover further here, but see the link below. In the following, we assume the scientists did their studies perfectly.

The placebo effect

Some people report feeling better when they take a pill, even though it is totally inert. This is because they expect to feel better.

This placebo effect causes problems for the pharmaceutical industry when they test whether a new drug is helpful or not, so they have studied it extensively.

They have found that the more "graphic" the placebo is, the more likely it is to appear beneficial. A colorful placebo pill is more "effective" than a white pill. An injection with inert saline is "better" than any pill. Even more "effective" is sham surgery, where a physician makes an incision but doesn't actually change anything.

If a drug is said to be expensive, then it is also "better" than if it is believed to be cheap.

These effects have not been studied for nocebo, but they are probably there too. That is important for this discussion, as the provocation studies are much more "graphic" than simply taking a pill. They involve special chambers or masks, and much fussing.

The nocebo effect

The nocebo effect is the opposite of the placebo effect. People feel worse, because they expect to, even though there is nothing that can trigger their symptoms.

Volunteers who have MCS or EHS are tested for a study. If they report symptoms when there is no real exposure, they have a nocebo response. Their mind is playing tricks on them. Several scientists then jump to the conclusion that if people with MCS or EHS have nocebo responses, then that is "proof" their illness is imagined.

It turns out that the nocebo effect is actually quite common among people who are fully healthy or have other diseases. People with MCS or EHS do not seem to be particularly prone to it. Just because some people succumb to the nocebo effect doesn't mean their illness is "not real."

The classic example is a report from 1886 where a physician used an artificial rose to produce symptoms in a patient with severe asthma and allergies (Makenzie 1886). Today, asthma and allergies are fully accepted, despite that those people can have nocebo reactions.

A more recent study used groups of healthy volunteers. Those who were told they would be exposed to an industrial solvent had a lot more nocebo effects than those who were told the gas was harmless (Dalton 1999).

These were all healthy people who were not accustomed to getting sick from fumes.

An even stronger demonstration of nocebo is a study of chemotherapy drugs. The drugs were administered by injection in cancer clinics. People in the waiting rooms could observe how patients coming back out from receiving their injection got sick with nausea and vomiting. They could also see how most lost their hair.

The study included a placebo group of 130 people who received an inert saline injection instead of the chemo drugs. This was so the scientists could gauge how effective the chemo drugs were. The people receiving the placebo all believed they got the chemo drug.

The scientists found many of the placebo patients got sick or lost their hair, solely because of the nocebo effect:

Placebo-induced nausea	35%
Placebo-induced vomiting	21%
Placebo-induced hair loss	31%

Source: Fielding, 1983, Table 6.

Some people would have two or three of these symptoms. The report did not state how many had no symptoms, and thus were not susceptible to the nocebo effect, but it may be less than half.

A 2018 study combined data from 127 drug trials with 250,726 placebo-treated patients. It found nearly half (49%) of the people given an inert placebo reported nocebo symptoms (Howick 2018).

There have been several other studies that all show that healthy people are very prone to the nocebo effect (Howick 2020; Lorber 2007; Lange 2005; Winters 2003; Devriese 2000; Dalton 1997).

The double standard

Clearly, the nocebo effect is very common and happens to all sorts of people, whether healthy or sick, whether they have some sort of environmental illness or not.

Nobody suggests that all these other people who have nocebo responses are mentally ill. But the same respect is not afforded people with MCS or EHS. The discussions of the MCS/EHS provocation studies do not even mention that healthy people get nocebo responses too!

It is an unfair double standard to demand that people with MCS or EHS do not have nocebo responses, when that is so common among everyone else.

Unfortunately, this double standard is all over the medical literature (Das Munshi 2006; Rubin 2005, 2011; Dalton 1999; Winters 2003).

Sometimes there is a clear conflict of interest. Two of the early and very influential studies (Dalton 1997, 1999) were produced at the Monell Center, which their own website states is funded by about fifty chemical manufacturers, fragrance producers, etc. In the 1999 report's discussion section, it is obvious the report was written to discredit people who complain about air pollution around chemical plants, and people with MCS.

The Dalton study mentions these two groups directly and jumps to the conclusion that since the nocebo effect exists, then all people who get sick from chemical fumes are simply having a nocebo response. Remarkably, the later nocebo studies rarely question this assumption at all.

It is extensively documented that results of scientific studies tend to say what pleases those who paid for them. For a particularly interesting and readable description of this problem, see the article by the long-time chief editor of the prestigious medical journal *BMJ* (Smith 2006).

The vast majority of doctors and scientists are not in the pocket of special interests, but they know there will be no further funding if their report displeases whomever paid for it. And there are other factors that create biases. Modern medicine has a long history of mislabeling people with diseases they do not understand as psychiatric. In the recent past that included asthma, migraines, hives, stomach ulcers, endometriosis, several autoimmune diseases and more. However much they try to be open-minded, doctors and scientists are just as prone to refusing to consider what contradicts their world view and engage in groupthink and echo chambers.

More information

Further details on the difficulties conducting reliable provocation studies on people with MCS at www.eiwellspring.org/edu/MCSprovocationStudies.htm.

More articles about MCS and EHS are available on www.eiwellspring.org/intromenu.html

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