"HYPERSENSITIVITY TO ELECTRICITY" - A WORKPLACE PHENOMENON RELATED TO LOW-FREQUENCY ELECTRIC AND MAGNETIC FIELDS

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ABSTRACT

The present study describes the symptoms in "hypersensitivity to electricity" on basis of the medical histories of 32 afflicted people. Thirty-one of the 32 subjects (97%) reported vague skin complaints, such as blotchiness, pinkness, reddening, itching etc. Twenty subjects (63%) reported symptoms from the nervous system, such as dizziness, fatigue, headache, sweating, depression, heart palpitations, memory lapses etc. There were no symptoms indicative of organic lesions of the nervous system. The symptoms, however, were often pronounced and resulted in sickness registration in 25% of the cases. Twenty-nine of the 32 subjects (91%) cited the VDU as the triggering factor, but other triggering factors were also mentioned: fluorescent lighting, sunlight, electrical devices and wiring, ventilation units etc. Discontinuing VDU work was the most frequent adopted measure and the method achieving the greatest symptom alleviation.

INTRODUCTION

In the 1980's a number of studies have attempted to determine whether work at video display units (VDU's) was capable of producing certain slight and otherwise commonplace skin symptoms and disorders (see the tabulation in WHO Offset Publication No. 99, 1987; Knave et al., 1985; Lidén and Wahlberg, 1985; Svensson and Svensson, 1987; Berg and Lidén, 1990.) These studies consistently found that certain subjective skin complaints did increase in VDU work, but clinical diagnoses failed to find any equivalent increase in objective findings.

Over the past 4-5 years, attention has also turned to a small group of people (primarily VDU users) reporting more pronounced problems, usually in combination with other symptoms from e.g. the nervous system, sensory organs, upper respiratory tract, gastrointestinal tract etc. The complaints were not solely related to VDU's. The proximity of electrical wiring indoors and outdoors, electrical machines and devices, fluorescent lighting etc, have been reported to be triggering factors. Many people in this group are heavily affected and have been officially registered as ill for long periods of time. The patients have coined the term "hypersensitivity to electricity," since they feel that the proximity of electrical equipment, devices and wiring is a least common denominator. They recently founded the "Association for People Injured by VDU Work and Electricity," an organization in Sweden which now has about 1300 members.

The objectives of the present study were to report on and tabulate subjective symptoms in "hypersensitivity to electricity." The medical histories of 32 people reporting this hypersensitivity served as the basis of the tabulation.

METHOD AND MATERIAL

Each subject's medical history was taken by one of us (BK) and the information obtained was systematically tabulated and analysed. Thirty-two (32) people participated in the study. They were recruited in three different ways:

- Ten were selected at random from members of the "Association for People Injured by VDU Work and Electricity" resident in the Stockholm area (group A).

- Employees of the National Telecommunications Administration, referred to us by the Administration's central Occupational Environment Unit. The first 10 employees (living in different parts of Sweden) in this category were selected (group B).

- Twelve people were referred to us in some other way, primarily from local occupational health & safety services (group C).

Eleven of the 32 subjects (34%) were men, and 21 (66%) were women. The mean age of the men was 37 (range 20-61) years, and the mean age of the women was 41 (range 21-60) years. At the time they were afflicted, 20 of the 32 subjects (62%) worked as secretaries, telephonists, VDU operators with routine duties etc., whereas 12 (38%) worked as economists, engineers, managers etc.

SUMMARY OF RESULTS AND DISCUSSION

Symptoms and symptom prevalence. Thirty-one of the 32 subjects (97%) reported diffuse skin complaints, such as a rosy and reddened skin, hot, warm and burning sensations, pain, itching etc. Twenty persons (63%) reported functional symptoms from the nervous system, such as dizziness, tingling, fatigue, weakness, headache, difficulty in breathing, sweating, depression, heart palpitations, memory lapses etc. There were no symptoms indicative of any organic lesions of the nervous system. Seventeen of the 32 subjects (53%) also reported symptoms from eyes and vision, which did not, however, distinguish this group from other groups of VDU-users.

Initial and predominant symptoms. For 19 of the 32 subjects (59%), skin complaints were the first symptoms of "hypersensitivity to electricity". For 10 subjects (31%) and 7 subjects (22%), symptoms from the nervous system and the eyes respectively were the first symptoms detected. There was a similar distribution of the predominant groups of initial symptoms: skin symptoms were most common (63%), followed by symptoms from the nervous system (41%). Other groups of symptoms displayed a much lower prevalence.

Course of illness. The disorder proved to be of strikingly recent date; 25% fell ill in 1988, 60% in 1986 or later and 85% in 1983 or later. More than 60% of the subjects had symptoms which remained unchanged or became progressive after onset. Illness symptoms were often pronounced and resulted in official illness registration in 25% of the cases.

Triggering factors. Twenty-nine of the 32 subjects (91%) cited the VDU as the triggering factor in current symptoms. Other triggering factors ultimately developed (fluorescent lighting, electrical devices and wiring, ventilation units, cars, trains, sunlight etc.). The high proportion of VDU users in the material may have been due to various selective mechanisms. As a result of the current public debate on VDU's, symptomatic VDU workers may have been selected to the study more readily than symptomatic people with no VDU work duties. The temporal link between symptoms and VDU work (e.g. in the development of skin symptoms after an employee switched to a different VDU) may be more informative in this context.

Effects of certain countermeasures. The effect of adopted countermeasures appeared to depend on the type of symptoms displayed. When a person only had skin symptoms, she/he had a good chance of improving. But when symptoms were from the nervous system, the adopted counter-measures failed to produce any improvements. The present study was unable to ascertain the reason for this discrepancy. "Hypersensitivity to electricity" may consist of different sub-components, some of which possibly more resistant to therapy than others.

Discontinuing VDU work was the most common and even the most effective symptom-alleviating measure. However, switching to a low-emission VDU usually did not result in any improvement. On the contrary, several cases of deterioration were noted.

Comparisons between recruitment groups

The different recruiting methods probably enabled different selection mechanisms to affect the composition of the sub-groups. In group B (with the smallest percentage of symptoms from the nervous system, the smallest percentage of symptoms in general and with a more favourable recovery), subjects were all working full-time. This was in contrast to group A in which most of the subjects were registered as ill. People with moderate symptoms were often able to continue working, despite their symptoms.

It may be that the Telecom Administration employees in group B represented an "early" stage of "hypersensitivity to electricity," whereas people "injured by electricity and VDU work" in group A may have represented a later stage in development of that disorder. Or the people in groups A and B may have actually represented two different symptomatologies.

Skin symptoms and symptoms from the nervous systems. Despite the limited

scope of our study, some differences in the material were discernible in respect to skin symptoms and nervous system symptoms. People with these two symptom categories differed in e.g. age and sex distribution, possible triggering factors, the efficacy of remedial measures and prognosis (see Table 1.)

Table 1. Differences between subject groups with skin symptoms and nervous system symptoms in the studied group"

Condition	**Skin symptoms**	**Nervous system symptoms**
Age variation	None	Increased with age
Symptoms from a VDU	Rapid symptom onset more common	Onset usually insidious
Symptom when switching to a different VDU	Occurred in some cases	Did not occur
Symptoms from electrical equipment	Uncommon	More common
Treatability	Most improved	Few improved
Prognosis	Relatively good	Relatively poor

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