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Case-control Study of Semicircular Lipoatrophy, a New Occupational Disease in Office Workers

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Abstract: Case-control Study of Semicircular Lipoatrophy, a New Occupational Disease in Office Workers: Luis Reinoso-Barbero, *et al*. Occupational Medicine. Grupo Banco Popular (GBP), Spain—Objectives: Semicircular lipoatrophy (SL) is an emerging occupational pathology. Its etiology is poorly understood. We intend to establish the probable risk factors and estimate the relative risk. **Methods:** A case-control study was performed. Our company had 55 diagnosed cases. As controls, we used the 3 closest healthy coworkers to each case. We calculated the chi square, odds ratio and logistic regression for different exposures, during the 3 years from September 2007 to August 2010. **Results:** There was 100% participation for the cases and 70.9% for the controls (ratio 1 : 2.1 case-control). The only risk variables found were female gender (p<0.02) and exposure to leaning on the edge of a table (p<0.01). In addition, a breakdown by sex objectifies a much stronger association with leaning on the edge of a table in women (p<0.01) than men (p 0.67). **Conclusions:** Female gender and leaning on the edge of a table (repeated microtrauma), especially in women, are risk factors for development of SL. Other variables seem to be confounding factors associated with female gender. There were no SL cases showing statistically significant relations with history of cancer or autoimmune diseases. There was also no significance with regard to wearing jeans. There is therefore a new risk for office staff in addition to the more traditional disorders (musculoskeletal, ocular, and psychosocial). Further studies are necessary to evaluate what we consider an underdiagnosed condition, since there is a large percentage of people that are potentially exposed and we found very little information in the literature on the matter.
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Semicircular lipoatrophy (SL) is an emerging pathology. It is considered benign, reversible, and rare. Its etiology is poorly understood, and it probably has multifactorial origins[1, 2]. SL is an atrophy of subcutaneous fat in the form of a semicircular band, mainly in the anterior and lateral thigh about 72 centimeters from the ground, as shown in the Fig. 1.

It was first described in 1974 by two German physicians[3]. The first outbreak was described in the spring of 1995 in a Belgian bank insurer[4]. The first outbreak in Spain was described in February of 2007[5–7]. They identified as risk factors for this injury low relative humidity, the use of round tables with thin edges and repetitive microtrauma of the thighs against the edge of the table[4–7]. Since then, more sporadic cases have been reported in administrative European employees, without major differences between them.

The current Spanish law on the prevention of occupational risks, Law 31/1995[8], was transposed from European Directive 89/391/EEC and Article 118A

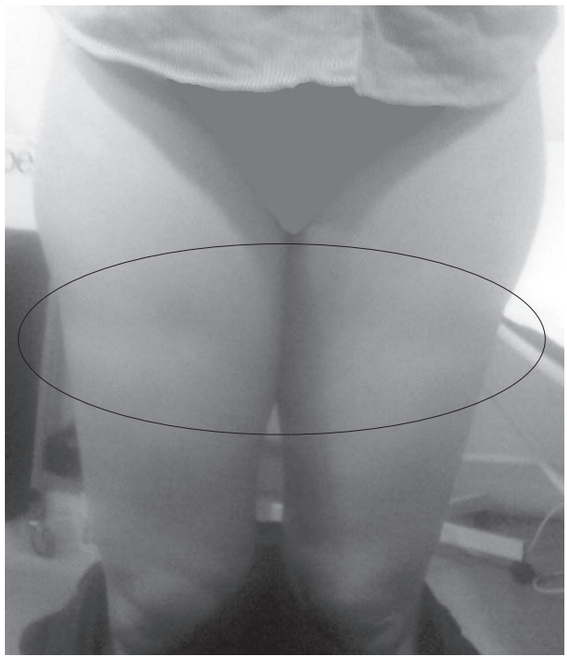

Fig. 1. Semicircular lipoatrophy lesion.

of the Single European Act[9], which relate to the implementation of measures to promote improvement of safety and health of workers at work. This law contains the general legal framework within which policy operates community-based prevention. SL is considered occupational because most of the reported cases have occurred in office buildings with closed ventilation systems and artificial climates. The affected employee usually has a working area with large tables and plenty of electrical wiring[2, 10–18]. The urban worker spends between 80 and 90% of his time in closed areas. This problem has been strengthened by a growing need for energy saving, which has led to the design of increasingly airtight buildings[19]. SL has similarities with sick building syndrome and falls within the building-related illnesses. Although these are two different diseases, there seems to be common origins derived possibly from the technological developments of new buildings[5, 17, 20].

The most widespread physiopathogenic theories suggest there is an accumulation of electrostatic charges on objects such as tables, computers, or phones. These charges could generate shocks that could explain the macrophage activation and production of cytokines that destroy adipocytes in the thighs[14, 21–25]. Other theories claim that electromagnetic fields generated by the wiring and fixtures in the work environment can be absorbed by the metal parts of the tables and that they are discharged into the body when a microtrauma occurs[14, 26–28].

The aim of this study was to examine the risk factors described in the literature and estimate the relative risk of each of them in our population.

Material and Methods

In September 2010, we conducted a case-control study in employees from a total cohort of 3,055 employees, of which 72.72% were employed directly by our company and 27.28% were employed by other surrogate companies. The first design was carried out as a descriptive prevalence study of cases in five buildings beginning with the first case identified in September 2007 and lasting until August 2010, and then an observational analytical study of cases controls was conducted.

Cases were defined as workers with an existing disease described as atrophy of subcutaneous fat in the form of a semicircular band mainly in the anterior and lateral thigh about 72 centimeters from the ground during the follow-up period. The case detection method was an active campaign of case finding: Cases were found though a systematic screening conducted in our worker's health examinations, though affected workers and their representatives and by using informational signs posted in the buildings or an email containing an explanatory picture.

The case inclusion criteria were as follows:

1. Patient presented with SL-compatible lesions, at least once, during the follow-up period.
2. Patient works in one of our five buildings in Madrid, for our company or another company.
3. Patient was diagnosed visually by the bank's Occupational Medicine Services.

It is not easy to make the differential diagnosis between SL related to buildings and other similar pathologies. The SL must not have cutaneous or muscular effects. Almost all the cases were studied using ultrasound and serologic inflammation markers (C-reactive protein and glomerular sedimentation velocity).

The cases exclusion criteria were as follows:

1. Cutaneous effects such inflammation and erythema that could be detected visually or by ultrasound.
2. Muscular effects such inflammation and muscular atrophy or hypertrophy that could be detected by ultrasound or by serologic inflammation markers.

Controls were defined as healthy workers without SL lesions who held a working position close to a case. Controls were subjected to environmental conditions (temperature, relative humidity, exposure to electrostatic and electromagnetic fields) very similar to those of the cases.

The control candidates were identified as a representative sample of the cohort. Our labor risk prevention technician measured the temperature and rela-

tive humidity monthly at every case's workplace and provided us a list of the three workers closest to each case. Three new controls were used for each new case. We then sent a questionnaire with an informed consent form to all control candidates.

The controls inclusion criteria were as follows:

1. Answered our e-mail questionnaire.
2. Works frequently in one of the three sites closest to a case, thus having environmental conditions (temperature, relative humidity, exposure to electrostatic and electromagnetic fields) very similar to a case. No cases had isolated workplaces. All had close coworkers.

The controls exclusion criteria were as follows:

1. Presented with SL-compatible lesions from September 2007 to August 2010.
2. Failed to answer to our e-mail questionnaire.

It was decided that the relationship between cases and controls would be 1 : 3 to increase the strength of possible statistical differences. All workers (cases and controls) were specifically informed and gave informed consent for the use of data for epidemiological purposes and research by Occupational Medicine via e-mail.

Data for the following variables were collected in subsequent visits: date of first visit, when the worker perceived the injury, unilateral or bilateral, length, height, depth of the lesion (confirmed by ultrasound) and blood tests (hematology, biochemistry and inflammatory markers).

Data for the following variables were collected through surveys via email with the cases: evolution and disappearance of the lesions.

All variables are shown in Appendix 1.

For statistical analysis, a univariate analysis with OPENEPI (www.openepi.com, free access) was performed. We calculated the chi-square (χ^2) for two by two tables and for different exposures in cases and controls. SPSS 18 was used for the multivariate analysis using the variables showing a statistically significant relationship with SL in the results of the univariate analysis (sex, age, weight, use of a computer outside of the office, shocks, use of rubber-soled shoes and leaning of the thighs on the edge of tables), and some variables found in the literature that seemed to be interesting (wearing tight clothes, jeans and synthetic fibers) were selected for multivariate logistic regression analysis. To estimate possible relationships we calculated the odds ratio (OR) for different exposures, in cases and controls from the date of first diagnosis until August 2010. The OR was obtained taking into account all the risks described in the literature through a logistic regression to clear potential confounders. To this end, we recoded and dichotomized the following variables:

1. Overweight and/or obesity: when body mass index (BMI) was greater than or equal to 25.
2. Outside work: routine use of a computer for more than an hour a day outside the office.
3. Routinely receive electrical shocks: when the patient had perceived them almost daily.
4. Habitually wearing tight clothing at the level of the thighs: when the patient mentioned wearing tight clothing daily.
5. Wearing jeans: when the patient mentioned wearing jeans almost daily.
6. Clothing fibers: when the patient reported a higher frequency of wearing clothing made from fibers other than from natural sources.
7. Use of rubber-soled shoes: when the patient wore shoes with rubber soles more frequently than those with leather sole.
8. Age: young workers were considered to be under 40 years old, and elder workers were considered to be 40 years old or more.

Results

All 55 patients responded to the survey, and 117 of 165 controls responded to the questionnaire (70.9%), as shown in Table 1. That is, the ratio was 1 : 2.1 control cases. Employees of the company made up 73.3% of the participants, with the other 26.7% being employed by outside companies. The average attack rate of the affected buildings was 1.8%; broken down by each of the five buildings, it was 2.6, 2.2, 1.9, 0.5 and 0.3% respectively.

The 55 patients with SL were all administrative staff (100%). All lesions were located on the thighs (100%). Of these, 38 employees were Group employees and 17 were from outside companies (8 companies). Table 1 shows sex and age matched between cases and controls. There were differences in mean age between cases and controls ($p<0.01$) and between men and women (women were younger, $p<0.01$). However, there were no statistically significant differences for this variable between cases and controls in men or women (Table 2).

In the univariate analysis, we observed that no

Table 1. Distribution of sex and age between cases and controls

	Cases	Control candidates	Controls who answered
Male	16 (40.91)	96 (41.71)	75 (42.24)
Female	39 (33.96)	59 (36.53)	42 (36.32)
Total	55 (36.01)	165 (37.32)	117 (40.23)

Expressed as number of subjects and mean age (in parentheses).

Table 2. Characteristics of the study population and variables. Summary table

General Data	Cases			Controls			*p* value
Population: n (%)	55 (32)			117 (68)			
Av. Age: mean (SD)	35.98 (7.15)			40.15 (9.75)			$p<0.01$**
Av. years in workplace: mean (SD)	3.90 (4.28)			5.75 (6.38)			$p<0.01$**
Av. years in company: mean (SD)	13.49 (12)			8.20 (7.44)			$p<0.01$**
	Male (n=16)	Female (n=39)	*p* value	Male (n=75)	Female (n=42)	*p* value	
Population percentage	29.10%	70.90%		64.10%	35.90%		$p<0.01$
Overweight or obesity: n (%)	6 (10.90)	13 (23.63)	$p>0.05$	45 (38.46)	11 (9.40)	$p<0.01$**	
Av. Age: mean (SD)	40.93 (8.33)	33.92 (5.53)	$p<0.01$**	42.22 (10.30)	36.36 (7.38)	$p<0.01$**	
Av. years in workplace: mean (SD)	5.22 (5.01)	3.43 (3.89)	$p>0.05$	6.37 (6.41)	4.71 (6.20)	$p>0.05$	
Av. years in company: mean (SD)	11.91 (10.07)	6.71 (5.51)	$p>0.05$	16 (13.47)	8.92 (7.29)	$p<0.01$**	
Survey results:							
Autoimmune disease: n	4	10		26	15		
Heart disease: n	4	1		15	2		
Cancer: n	0	2		0	1		
Smoking:							
Nonsmokers: n	13	28		58	32		
Average cigarettes per day: mean (SD)	9 (5.29)	9 (4.63)		13.20 (10.40)	5.30 (3.80)		
Alcohol consumption:							
No: n	1	10		12	12		
Sporadic: n	13	29		54	29		
Daily: n	2	0		9	1		
Sedentary lifestyle: n	6	24		33	27		
Sleep disorders: n	5	14		17	14		
Outside workplace use of computer:							
Less than one hour daily: n	4	14		30	20		
More than one hour daily: n	7	2		28	6		
Shocks:							
Weekly: n	6	10		15	4		
Daily: n	0	8		2	3		
At work: n	7	16		12	11		
Pregnancies: n		2			11		
Leans thighs on table frequency: n	8	23		17	10		
Routine use of:							
Synthetic clothing: n	0	2		6	0		
Rubber soled shoes: n	9	8		32	3		
Tight clothes on thighs: n	0	10		1	9		
Jeans: n	0	5		7	10		
Characteristics of lesions:							
Location on left leg: n	5	8					
Location on right leg: n	3	8					
Bilateral: n	1	6					
Bilateral but favors right leg: n	5	5					
Bilateral but favors left leg: n	2	12					
Height levels of PCR: n	0	3					
Av. height from floor in cm: mean (SD)	73.81 (4.92)	72.05 (2.76)					
Av. width in cm: mean (SD)	2 (0.00)	1.95 (0.32)					
Av. length in cm: mean (SD)	7.63 (4.61)	7.81 (2.81)					
Av. depth in mm, measured by US: (SD)	2.11 (1.93)	4.12 (2.71)					

n, Number of subjects; SD, standard deviation; %, percentage; cm, centimeters; mm, millimeters;
Av., Average; US, ultrasound; **$p<0.01$.

statistically significant relationship existed between SL and these variables: smoking, hypertension, cardiovascular diseases, autoimmune diseases, cancer, alcohol consumption, sedentary lifestyle, sleep disturbances or the company employing the individual. Statistically significant relationships were found between SL and female gender, age younger than 40 years, BMI lower than 25, no daily use of a computer outside work, perception reported by patients on the frequency of shocks (electrostatic discharge), referred location of the shocks (office), wearing shoes with rubber soles and leaning of the thighs on the edge of a table.

In the multivariate analysis, we obtained no statistically significant relationship between SL in relation with; weight, height, BMI, working age, years of employment in our company, which company the individual worked for, personal history of cardiovascular disease, hypertension, cancer, autoimmune diseases, smoking, alcohol consumption, exercise, sleep disturbances, use of a computer outside work, wearing predominantly natural fiber clothing, synthetic fibers or both, wearing jeans, wearing tight clothing at thigh level, referred location of discharge or pregnancy. Only two variables showed a statistically significant relationship when studying the logistic regression with SL in the analysis with χ^2 by adjusting for age and sex: female sex ($p<0.02$, 95% CI 1.73 to 11.77) and leaning of the thighs on the edge of a table ($p<0.01$, 95% CI 1.86 to 9.13). Table 3 summarizes these results. When performing the same regression in a sex-stratified way, we obtained statistical significance between leaning of the thighs on the edge of a table and SL in women (95% CI 2.7 to 66.20, $p<0.01$) but not in men. Table 4 summarizes the final analytical results disaggregated by sex.

Discussion

As a limitation of this study, we must consider the fact that several variables were collected through surveys via email. Although the possible answers where explained, the worker's interpretations of some answers need to be considered. Also, we must consider that some variables, like leans thighs on table frequency, which is directly related to the outcome, were subjectively indicated based on the subject's memory. We did not have any objective way to measure them. In the same way, the authors did not ask the controls if they used to rest their thighs on the edge of a table prior to diagnosis of the case (item 24). But the present status (item 21) could be a surrogate for the controls; therefore, it was used for variable comparison in Tables 3 and 4. In the present study, we did not contrast the influence of relative humidity and the edges of the tables with regard to the generation of SL since all of the workers worked under similar conditions for these two variables.

SL is a very new disease. It has surprised the 21st century by appearing in an environment that seems like a safe place to work. Whereas the only predicted disorders have been musculoskeletal, ocular and psychosocial, there is now a new disease that appears to be related to female gender and electrical charges. It is believed that the generation of static electricity is mainly produced by the rubbing of clothing of the worker on a chair, and that it is discharged when the worker leans the thighs on the edge of a

Table 3. Univariate and multivariate results comparison

	Univariate analysis		Multivariate analysis	
	Odds ratio and 95% confidence interval	*p* value	Odds ratio and 95% confidence interval	*p* value
Female	3.91 (1.91–8.22)	<0.01**	4.98 (1.77–13.99)	<0.01**
Young (less than 40 years old)	2.29 (1.07–4.9)	0.01*	0.77 (0.30–1.95)	0.59
Overweight or obese (BMI >25)	2.15 (1.04–4.42)	0.01*	0.66 (0.29–1.51)	0.33
Daily use (> 1 hour) of computer outside work	2.87 (1.42–5.81)	<0.01**	1.00 (0.35–2.83)	0.99
Daily shocks	2.95 (1.41–6.17)	<0.01**	0.96 (0.24–3.76)	0.95
Wear tight clothes on thighs daily	2.36 (0.89–6.22)	0.38	1.37 (0.40–4.64)	0.60
Wear jeans daily	0.58 (0.18–1.63)	0.99	0.25 (0.06–1.05)	0.05
Wear synthetic fibers more often than natural ones	0.69 (0.09–3.42)	0.18	1.85 (0.26–13.08)	0.53
Wear shoes with rubber soles more than ones with leather soles	1.08 (0.15–5.5)	0.35	2.13 (0.81–5.61)	0.12
Leans thighs on table frequency	6.70 (2.40–18.70)	<0.01**	4.42 (1.91–10.22)	<0.01**
Constant			0.12	0.00

Univariate analysis: Chi-square (χ^2) for two by two tables. Multivariate analysis: Odds ratio through logistic regression. BMI, body mass index; *$p<0.05$; **$p<0.01$.

Table 4. Results separated by gender

	Male		Female	
	Odds ratio and 95% confidence interval	*p* value	Odds ratio and 95% confidence interval	*p* value
Young (less than 40 years old)	1.37 (0.40–4.70)	0.61	0.30 (0.06–1.44)	0.13
Overweight or obese (BMI >25)	0.37 (0.10–1.28)	0.11	0.65 (0.17–2.47)	0.52
Daily use (>1 hour) of computer outside work	1.15 (0.34–3.88)	0.82	0.42 (0.04–3.97)	0.45
Daily shocks	1.31 (0.40–4.41)	0.99	1.20 (0.22–6.37)	0.83
Wear tight clothes on thighs daily	2.23 (0.63–8.07)	1.00	1.40 (0.37–5.29)	0.61
Wear jeans daily	1.07 (0.29–4.01)	0.99	0.24 (0.04–1.32)	0.10
Wear synthetic fibers more often than natural ones	1.03 (0.60–4.04)	0.99	2.25 (0.58–8.70)	0.99
Wear shoes with rubber soles more than ones with leather soles	2.24 (0.64–7.75)	0.20	5.86 (0.78–43.92)	0.08
Leans thighs on table frequency	1.63 (0.46–5.66)	0.44	9.50 (2.35–38.33)	<0.01**
Constant	0.22	0.12	0.81	

BMI, body mass index; **$p<0.01$.

table (microtrauma in the thigh caused by the desk). Other contributors of the generation of electrostatic charges are rubbing of shoes on the carpet, chair movement, paper roll calculators, low relative humidity and hobbies such as playing golf on artificial turf, among others. In February 2012, only 42 articles appeared with the keywords Lipoatrophia semicircularis (22 references) and semicircular lipoatrophy (20 references) in Medline. The small amount of literature is especially evident with regard to case descriptions[1, 22–25, 29, 30], disease outbreaks[4, 11, 12, 15, 16] and case-control[6] and intervention studies[2].

As Table 1 shows, the desired relationship between cases and controls was 1 : 3, but the observed relationship was 1 : 2.1. We believe that this difference is due to a greater involvement of the cases than of the controls.

Our study is analytical, but the results show that SL mainly affects women between the 3rd and 4th decade of life and that the area with the injury is about 72 cm from the ground (standard office furniture height). Most of the cases are female, and most of the controls are male. The females were younger than the males in this population (Table 2). In our research, SL was found more frequently in young people. However, controlling for the effect of age, we found that SL is linked to sex not age.

Our 5 buildings show some common characteristics to other affected buildings[2]: low relative humidity (34.15%), high average temperature (24.8ºC), carpet on the floor and not practicable windows among others. We also agree with other authors that it is not usually accompanied by other symptoms, except for heavy legs or fatigue[5]. In our study, only one worker referred to these symptoms. We can also confirm that the patient history is otherwise usually normal or not related to SL. Clinical examination, consisting of inspection, measurement and palpation of the lesion, is considered diagnostic and does not generally show other pathologies. The skin and muscle tissue around the lesion show no signs of inflammation. According to these authors, other complementary studies (radiological or electrophysiological) are usually normal and histopathologic features are nonspecific, showing only that a partial or total loss of fatty tissue is replaced by collagen fibers. Some authors recommend biopsy to better understand this disease[31]. We did not perform skin biopsies to check the histopathology because it is an invasive test and SL is a benign lesion. We thought there was no justification for it. Therefore, we performed ultrasound in almost all the cases. We think that the serologic inflammation markers and ultrasound are appropriate tests to differentiate SL from other pathologies.

Other authors[1, 2] have written about the measures taken for the treatment of this pathology. There is currently no curative treatment. Preventive treatment targeted at avoiding the risk factors described above can be considered. The majority of cases seem to be resolved within a few months after changing these conditions. The corrective actions more often repeated in the literature are to increase the humidity inside the building to more than 50%, to have an electrical ground connection for tables, to use tables that have wide borders and electrically insulated wiring and to avoid the presence of materials that accumulate static electricity. Of these, the best results have been seen with simultaneous implementation of the first three corrective actions, which achieved complete remission in 90% of cases in just 6 months[2]. The only measure

that has shown better results is retirement, which achieved complete remission in 95% of cases after 1 year[4].

The literature suggests that SL is associated with wearing jeans[29, 30]. However, in this study, we did not find any connection with wearing jeans or synthetic fiber clothing. In the univariate study, SL appeared to be associated with the use of rubber-soled shoes, but when adjusted for sex and other exposure variables, this association disappeared. This can explain partially the discrepancies obtained in odds ratios between univariate and multivariate analyses. We studied the possible relation between SL and the use of a computer outside the workplace for more than one hour per week. In the univariate analysis, it seems to be a protecting factor, but it ultimately seemed to be associated with the different roles of each gender, as shown in Table 3. The univariate analysis showed that SL occurred mainly in women who were young, thin, and not using a computer in their daily life outside work and reported receiving electrostatic discharges frequently and with greater tendency in the office. These statistically significant associations are consistent with the literature. The association with the frequency of shocks, the location (office), and no daily use of computers in the environment besides work supports the etiological theory of electrostatic charges on the job. However, when all these risk factors were studied as a whole through logistic regression, adjusting for age and sex, there was no such association. It was mostly related to gender roles and habits: use of time outside work hours, having a desired body weight, clothing, etc. Note that SL is seen more frequently in thin people, and women are more likely to have a lower BMI, because they tend to keep fit. Therefore, it appears that use of a computer for more than an hour per day outside of work is not a protective factor, as the women in our population used a computer outside work less than men. From a gender perspective, it was thought that these habits held mostly by women were risk factors for SL; however, this was ruled out in our study. In addition, by studying men and women separately with regard to the variable leaning of the thighs on the edge of a table, which retained statistical significance after adjusting for sex, it was found that this variable has a much stronger association in women than in men, where the association disappears. That is, the habit, might be expected to be a confounding factor in gender issues linked to women (postural habits, for example), they constitute a high risk to suffer SL, and yet, in men (in those who support them), there is a risk factor for suffering. The same exposure, therefore, has very different effects on women and men.

Conclusions

A. We can only state categorically that female gender and leaning of the thighs on the edge of a table (repetitive microtrauma) are risk factors for developing semicircular lipoatrophy.
B. Leaning of the thighs on the edge of a table (microtrauma) in women constitutes a high risk factor for suffering semicircular lipoatrophy. This is not the case in men. The same exposure, therefore, has very different effects on women than on men.
C. We found no statistically significant relationship between wearing jeans, clothing fibers, history of cancer diseases or autoimmune diseases and other variables of interest with semicircular lipoatrophy.
D. Further studies are necessary to evaluate what we consider an underdiagnosed condition, since there is a huge percentage of people potentially exposed and we found very little information in the literature on this matter.

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Appendix 1. Survey of cases and controls

Question:	Answer:
1. Any comments you would like to make	
2. Weight in kilograms (e. g., 53.2 Kg)	
3. Height in meters (e. g., 1.70 m)	
4. Company (e. g., BPE, DAESA…)	
5. Gender	a) Male b) Female
6. Age in years (e. g., 28 years)	
7. Years in actual workplace (e. g., 2.5 years)	
8. Years in company (e. g., 7.3 years)	
9. Personal history of medication allergies, respiratory or skin allergy, asthma, autoimmune diseases (e. g., psoriasis, atopic dermatitis, ulcerative colitis, Crohn's disease)	a) YES (please specify) b) NO
10. Personal history of high blood pressure, myocardial infarction, cardiovascular disease, etc.	a) YES (please specify) b) NO
11. Personal history of cancer (e. g., breast, colon, lung, skin, prostate)	a) YES (please specify) b) NO
12. Any other disease you see fit to mention	a) YES (please specify) b) NO
13. Do you smoke a cigarette or more daily?	a) YES (number of cigarettes) b) NO
14. Do you drink alcohol?	a) Daily b) Occasionally c) Never
15. Do you exercise?	a) Two times a week or more b) Less than two times a week
16. Any sleep problems?	a) I fall asleep easily. I rest more than 6 hours. My sleep is deep and restoring.
	b) Problem:
17. How many hours do you use a computer outside of work?	a) Never or very rarely
	b) Almost every day for less than one hour a day
	c) Almost every day for more than one hour a day
18. What kind of clothes do you wear at work?	a) Natural fibers since it last longer
	b) Synthetic fibers. I wear them depending on the season and then store them.
	c) Both, no preference
19. What kind of shoes do you wear at work?	a) Usually leather soles (natural)
	b) Usually rubber soles
	c) Both, no preference
20. Do you wear tight clothes to work at the thighs?	a) Frequently b) Rarely c) Never
21. Now, today, in the present. Do you support the thighs on the edge of a table such as when you pass documents to the coworker in front of you, look at a coworker's computer while standing or put your feet on chair legs?	a) Frequently b) Rarely c) Never d) I don't know
22. Do you frequently get shocks (electrostatic discharges)?	a) Very often, almost every day (In what circumstances? Car, work, home?)
	b) Frequently, almost every week (In what circumstances? Car, work, home?)
	c) Rarely, almost every month (In what circumstances? Car, work, home?)
	d) Rarely or never
23. Do you wear jeans at work?	a) Frequently b) Rarely c) Never
24. Only asked to cases: Did you rest your thighs on the edge of the table before diagnosis (in the past)?	a) Frequently b) Rarely c) Never d) I don't know
25. Only asked to women: Have you had any pregnancy between September 2007 and now?	a) YES (how many?) b) NO