

PARENTAL TYPE OF PERSONALITY, NEGATIVE AFFECTIVITY AND FAMILY STRESSFUL EVENTS IN CHILDREN WITH CANCER

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SUMMARY

Objective: Psychological interactions between parents, children and social environment are very important for childhood health. The type of personality and stressful events are probably also cancer risk factors. We investigated personality types A/B and D (negative affectivity and social inhibition) in parents of children with cancer (PCC), as well as social environmental factors, and family / children's stressful events before the appearance of cancer.

Subjects and methods: Bortner Type A Scale for evaluating parental type A/B personality, and 14 question personality test (DS14) for parental type D personality (negative affectivity and social inhibition score) were performed. Questionnaire eligible information about stressful events and social environmental factors in children with cancer (CC) were analyzed.

Results: Analyzing 127 PCC and 136 parents of healthy children (PHC) we found no significant differences in A/B type personality and social inhibition. There was significant difference in negative affectivity. PCC had more negative affectivity than PHC. We found more stressful events before cancer appearance in the families of children with cancer (FCC) than in healthy families (FHC), and more children's stressful events in CC than in healthy ones (HC). There were more quarrels in FCC, while CC were more „easy good-mannered children” than HC.

Conclusions: Our results support the hypothesis that stress is a cancer risk factor and the idea that impaired parental functioning may be a mechanism linking family stress with the aetiology of cancer.

Key words: cancer aetiology - childhood psycho-oncology - parental type of personality - family stress - quarrels

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INTRODUCTION

The issue of the role of psychological factors in cancer development has intrigued both researchers and patients. Although some recent results did not support the hypothesis that certain personality traits are associated with cancer risk, other suggested that type-D personality was independent prognostic factor for the development of cancer (Hansen et al. 2005, Denollet 1998). Some authors claimed that there was no psychological factor for which an influence on cancer development has been convincingly demonstrated (Garssen 2004, Dalton et al. 2002).

Although a direct relationship between psychological stress and the development of cancer has not been significantly proven (Dalton et al. 2002), the links between the psychological and physiological features of cancer risk and progression have been studied through psychoneuroimmunology (Kemeny 2009).

Recent studies analyse the systemic effects of the stress hormones glucocorticoids and catecholamines, both secreted by the adrenal gland, and norepinephrine released by sympathetic nerve terminals, on the immune system (Segerstrom & Miller 2004, Charmandari et al. 2005). They stimulate NK cells and inhibit cytotoxic T

cells and macrophages decreasing cellular immunity. Theoretically, this can contribute to the development and progression of some types of cancers (Reiche et al. 2004, Armaiz-Pena et al. 2009).

The persistent activation of the hypothalamic-pituitary-adrenal axis in the chronic stress response and in depression may impair the immune response to tumours, as well as modulate the activity of oncogenic (cancer-causing) viruses, DNA-repair processes, and the expression in tumour cells of genes that may affect the tumour's growth and metastasis (Antoni et al. 2006). It is evident that a network of bidirectional communication between CNS, peripheral nervous systems, endocrine, and immune systems (Reiche et al. 2004) exists, and that stress-induced immune dysfunction has implications for health (Glaser & Kiecolt-Glaser 2005). Also, we would like to point out Charmandari's words: "Appropriate responsiveness of the stress system to stressors is a crucial prerequisite for a sense of well-being, adequate performance of tasks, and positive social interactions. By contrast, inappropriate responsiveness of the stress system may impair growth and development and may account for a number of endocrine, metabolic, autoimmune, and psychiatric disorders. The development and severity of these

conditions primarily depend on the genetic vulnerability of the individual, the exposure to adverse environmental factors, and the timing of the stressful events, given that prenatal life, infancy, childhood, and adolescence are critical periods characterized by increased vulnerability to stressors” (Charmandari et al. 2005).

The role of family psychological factors in paediatric cancer onset and progression remains to be clarified. „Patients have families“, wrote Richardson (1948), calling attention to the importance of family background in the development, course and prognosis of illness (Cierpka 1982). As the negative emotions and family emotional climate in general are central issues in understanding the links between family process and psychosomatic diseases (Wyman et al. 2007, Rodriguez & Green 1997, Östberg 1998), we still lack fundamental knowledge about the specific links between cancer in children and their parents' negative emotions as well as how stressful events are associated with cancer risk.

Wyman et al. found that chronic family stress was associated with increased illnesses in children (Wyman et al. 2007). Stressful events during childhood are increasingly suspected of playing a role in the later development of asthma, allergic skin disorders, or allergic sensitizations. Dramatic life events like the death of a family member, serious illnesses of a family member or the separation of parents, and also harmless events such as moving house are suspected of increasing the risk of allergies for the children affected (Herberth et al. 2008). The immune system obviously plays a mediator role between stress on the one hand and allergies on the other. Sepa et al. found a correlation between psychosocial stress in families and diabetes-related autoimmunity during infancy (Sepa et al. 2005).

The aim of our study was to establish whether similar psychological factors influence the onset of childhood cancer diseases. We analyzed the psychosocial background of the families of cancer patients and compared it with that of the families of healthy children. We investigated parental type of personality and family / children's stressful events in these two groups in order to see if there were any important differences.

SUBJECTS AND METHODS

The study cohort consisted of 127 parents of children with different stages and different cancer diseases (PCC), and 136 parents of healthy children (PHC). Regarding baseline demographics our sample was composed of 34.6% fathers and 65.4% mothers. They completed a questionnaire which contained eligible information on the parent's personality traits, the family and the children's stressful events (before the appearance of tumour disease), and social environment factors.

We performed the Bortner Type A Scale for evaluating parental type A/B personality (Edwards et al.

1990). Type A or type B characteristics reflect an individual's aggressiveness, hostility, desire for achievement, perfectionism, competitiveness, and ability to relax. Type A persons feel competitive, are prompt for appointments, do things quickly, always feel rushed, and are often angry and hostile. Type B individuals are relaxed, take one thing at a time, and express their feelings.

We also performed the 14 question personality test (DS14) for parental type D personality, which measures a person's overall level of distress based on two emotional states: “Negative Affectivity” or the level of worry, irritability or dysphoria and “Social Inhibition” or the level of social discomfort and self-confidence (Denollet 2005). Type D individuals have high negative affectivity and social inhibition scores.

Questionnaire examples of family life stressful events which happened before the appearance of tumour disease were: legal issues, war trauma, death of a family member, serious illness of a family member, car accidents etc. Examples of children's life stressful events were: problems in school or kindergarten, being separated from the parents for a time, war trauma, car accident, death of a family member, serious illness of a family member etc. Growing-up difficulties were categorized as hard, medium or easy, and financial incomes were categorized as excellent, good or bad.

Statistical Analysis

To analyze the results we used SPSS 11.5 Statistical Software Package (Statistical Package for Social Sciences). Baseline characteristics of the groups were examined using Independent t-test for continuous variables, and Chi square analysis for categorical variables. For correlations between different categories Pearson's (2 tailed) test was performed. Data distributions were analyzed with the Smirnov-Kolmogorov test. All data distributions were normal, and presented as mean \pm SD. Comparisons were considered significant if $p < 0.05$.

RESULTS

Parents of cancer children (PCC) vs. parents of healthy children (PHC). Table 1 shows a descriptive analysis of the five of six variables that are significant to this study.

Parental A/B type of personality. There were no significant differences between PCC and PHC regarding A/B type of personality ($p > 0.05$).

Parental D type of personality (negative affectivity and social inhibition). Considering D type of personality, there were some differences. Although there were no significant differences between the two groups regarding parental D type of personality and social inhibition, groups differed significantly regarding negative affectivity ($t(261) = -2.006$, $p < 0.05$). PCC had greater negative affectivity compared to PHC (Fig.1).

Table 1. Descriptive analysis of negative affectivity, stress, quarrels and growing-up difficulties (statistical significant variables $p < 0.05$)

	Family of healthy children			Family of children with cancer		
	N	mean	st.dev.	N	mean	st.dev.
Parent's negative affectivity	136	11.33	5.84	128	12.99	7.52
Family stress life events	137	0.23	0.42	128	0.37	0.48
Stress of the child	137	0.09	0.28	129	1.59	1.38
Quarrels	138	0.05	0.22	129	0.12	0.35
Growing-up difficulties	136	1.60	0.59	127	1.37	0.55

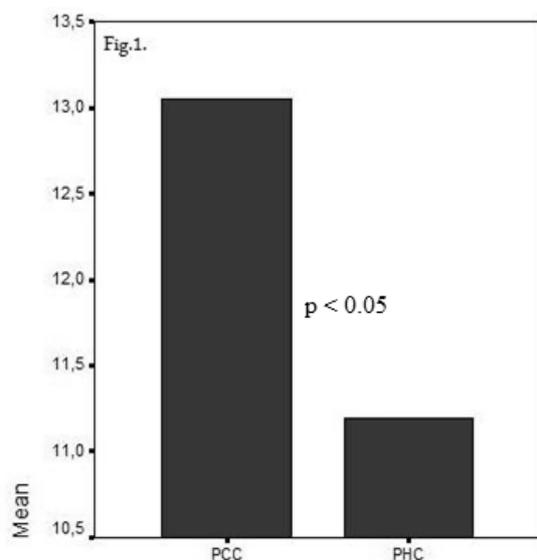


Figure 1. Mean of parent's negative affectivity found in two groups (PCC=parents of cancer children, PHC=parents of healthy children)

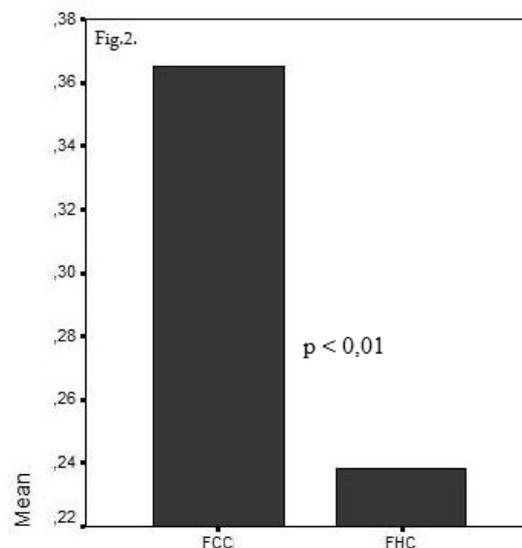


Figure 2. Mean of family stress life events found in two groups (FCC=families of cancer children, FHC= families of healthy children)

Family stressful life events. There were significant differences between the two groups regarding family stressful life events ($t(263) = -2.536$, $p < 0.01$). PCC reported they had more family stressful life events than PHC (Fig.2).

Children's stressful life events. There were significant differences between the two groups regarding stressful life events of the child ($t(264) = -2.680$, $p < 0.01$). PCC reported that their children had more stressful life events compared to healthy children (Fig.3).

Children's stressful life events and parental negative affectivity. We found differences between FCC and FHC regarding correlations of parental negative affectivity and children's stressful life events. Negative affectivity of PCC correlated strongly with children's stressful life events, contrary to what was found in PHC. (Pearson's Correlation Sig. (2-tailed) = 0.920; $p < 0.0001$).

Family quarrels. There were significant differences between the two groups regarding family quarrels (verbal fights) ($t(265) = -2.047$, $p < 0.05$). In FHC there was less arguing (verbal fights) than in FCC (Fig.4).

Cumulative effect of family stress, children's stress and family quarrels. The score of family stress, children's stress and family quarrels demonstrated the

difference between these two groups ($t(264) = -3.615$, $p < 0.001$).

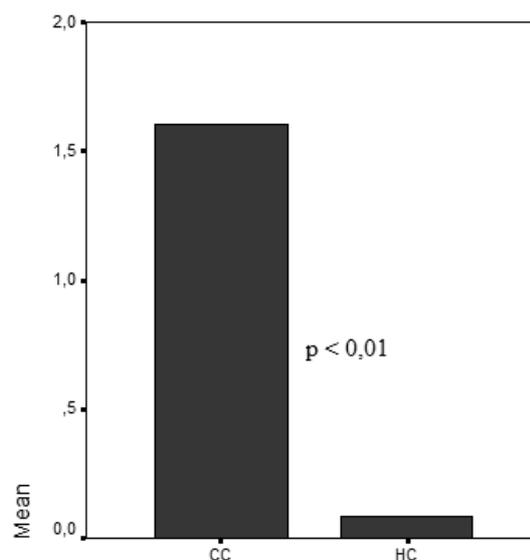


Figure 3. Mean of stress life events of the children found in two groups (CC=cancer children, HC=healthy children)

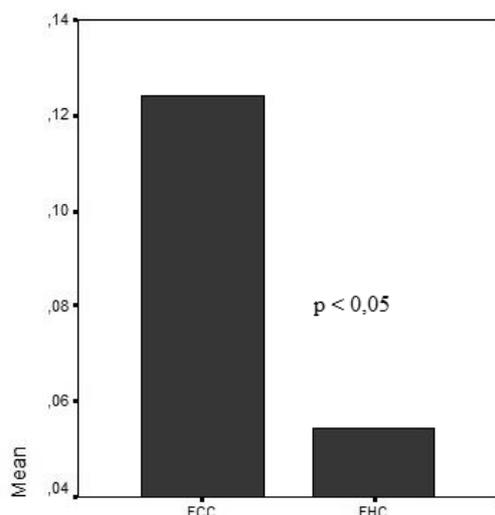


Figure 4. Mean of family quarrels (verbal fights) found in two groups (FCC=families of cancer children, FHC=families of healthy children)

Growing-up difficulties. There were significant differences between the two groups of children regarding difficulties in child's growing-up ($t(261)=3.293$, $p<0.001$). CC were more „easy and good-mannered children“, than HC (Fig.5).

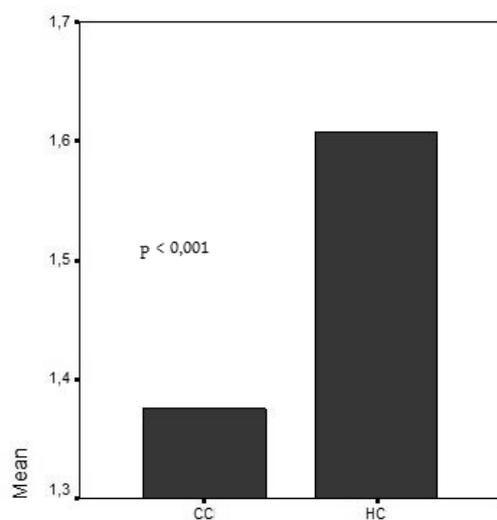


Figure 5. Mean of growing-up difficulties in childhood found in two groups (CC=cancer children, HC=healthy children)

Parental type of personality and growing-up difficulties. As opposed to FHC, in FCC we found a significant correlation between parental type of personality and CC growing-up difficulties (Pearson's Correlation Sig. (2-tailed)=0.205; $p<0.05$). In FCC with children who had fewer difficulties in growing up, contrary to findings in FHC, there were more parents with A type personality.

Financial incomes. There were no significant differences between the two groups regarding family financial incomes.

DISCUSSION

To our knowledge, this is the first study on the type of personality among the parents of the children with cancer diseases. No significant differences in A/B type personality and social inhibition between PCC and PHC were found. There were significant differences in negative affectivity. PCC had more negative affectivity than PHC. It is difficult to say if their high negative affectivity is the consequence of their children's cancer disease, or whether this is their constant unchangeable personal feature. Also, it is not easy to explain the significant correlation between children's stress life events and parental negative affectivity in the cohort of FCC, as opposed to FHC. In order to find out whether negative affectivity is a constant and unchangeable personal feature, it would be important to reevaluate the parent's negative affectivity score during the cancer treatment and afterwards. Our study was cross-sectional, so prospective studies are needed.

Our CC were more „easy good-mannered children“ than HC, and we would like to know whether their type of personality could be one of the risk factors for their illness. Also, in contrast to FHC, we found a significant correlation between „easy good-mannered children“ and parental type A personality in the cohort of FCC. This may be explained by the influence of the parent's aggressiveness and competitiveness which are the characteristics of type A personality, on the suppression of the children's personality and their negative emotions. There is a probability that this contributes to cancer risk.

Many empirical studies confirmed that processes of interaction exist between family dysfunction on the one hand, and the aetiology, pathogenesis, and course of illness, the results of treatment, and the prognosis on the other. Psychosocial factors such as family stress and relationship conflicts within the family can be regarded as significant factors (Cierpka 1982, Rodriguez & Green 1997, Östberg 1998, Essex et al. 2002, Lazarus & Folkman 1984). Some authors found associations between chronic family stress and increased illnesses in children (Wyman et al. 2007, Herberth et al. 2008, Sepa et al. 2005). Type of personality is important for social as well as for family interactions (Edwards et al. 1990, Spinetta 1978). Our results support the idea that impaired parental functioning may be a mechanism linking family stress with cancer risk.

We found more stressful events in FCC than in healthy children, and more children's stressful events in CC than in HC. There were more quarrels in FCC that can contribute to stress trauma. We found a cumulative effect of family stress, children's stress and family quarrels which made the difference between CC and HC even more significant. In our results stress correlated with cancer risk, although it is still a great enigma with different study results.

One of the reasons is the fact that most studies measured stressful events, not stress trauma, and that there is a different biological vulnerability to stress

among people, which depends on many factors such as a person's genetics, biochemistry, environment, history, and psychological profile.

Even the timing of the stressful events is very important (Charmandari 2005). Severe family life events will probably inflict psychological stress even in very young children, despite the fact that they may not even understand what is going on. Sepa et al. (2005) found a significant correlation between psychosocial stress in families and diabetes-related autoimmunity during infancy (Sepa et al. 2005). Since critical periods for increased vulnerability to stressors are prenatal life, infancy, childhood, and adolescence (Charmandari et al. 2005), we assume that adequate social support in these periods of life might contribute to cancer prevention.

Although our study was cross-sectional, and could not provide the best design to test the hypothesis, the results are important and inspiring for further prospective and better designed studies.

CONCLUSION

We have found important differences in psychosocial background between families of cancer patients and families of healthy children. Our results support the concept of stress as a cancer risk and the idea that impaired parental functioning may be a mechanism linking family stress with cancer risk. Our cancer patients were “easy good-mannered children”, and we have to find out if their type of personality may also contribute to the development of tumours. Further prospective and better designed studies are needed to analyze the importance of psychosocial factors and family background in the development, course and prognosis of children's cancer diseases. It is possible that this will help in understanding the relationship between biological and behavioural influences in cancers.

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