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RESEARCH ARTICLE

ASSOCIATION OF PERSONALITY TRAITS WITH ORAL TUMOURS- A CROSS SECTIONAL STUDY

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ABSTRACT

Aim: To assess the association of personality traits with oral tumours. **Materials and methods:** The sample comprised of 215 patients, attending outpatient department of a dental tertiary referral center of south India. Case and control - comparative cross sectional study was designed. Cases consisted of subjects (105) diagnosed with tumour of the oral cavity. Controls consisted of subjects (110) who do not have any tumour at the time of screening for oral diseases. The cases and controls were matched for age, sex, pernicious habits, spicy diet, medical history of syphilis, family history of occurrence of tumour and presence of sharp tooth in relation to tumour on oral examination. Eysenck's personality questionnaire was used for categorising the personality trait viz. Psychoticism, extraversion, neuroticism and lie scale. Statistical analysis was done using Pearson's chi square test to find the association of personality types with tumours of the oral cavity. **Results:** The personality type neurotic and the combination of Psychotic neurotic, Psychotic ambivert neurotic lie were significantly higher among the cases. The personality type Average and the combinations of Ambivert average was significantly higher among the controls. **Conclusion:** Personality traits of a person and the combination of various traits are associated with occurrence of oral tumours.

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INTRODUCTION

Mouth is used to express the gamut of emotions such as anger, rage, determination, tenderness etc. The oral cavity may become the prime target for many emotional disorders, without the patient being aware of the cause (Irwin Walter Scopp, 1969). Psychology helps us to understand why other people do the things they do, to understand ourselves and our reaction to other people, how our brain and body are connected and how to deal with the stresses of life. Almost all the patients have emotional pressures and problems and these may be expressed through the body in the form of disease (Somatisation) (Irwin Walter Scopp, 1969). Personality is a key word in psychology (Park, 2009). Personality is defined by Warren (1934), as "the integrated organization of all the cognitive, affective, conative, and physical characteristics of the individual as it manifests itself in focal distinctness to others" (Eysenck, 1946). Personality predispositions represent cognitive, affective, or behavioural tendencies on the part of a person that are relatively stable across time and context. They refer to enduring characteristics that help to define a person's identity and help to distinguish one person from another (Michael et al., 1995). There are various theories of personality out of which Trait theory is one among them.

A trait is a consistent, enduring way of thinking, feeling or behaving, and the trait theories attempt to describe personality in terms of a person's trait (Edward et al., 2003). Gordon Allport and Odber in 1936 attempted to list and describe the traits that make up personality (Edward et al., 2003). The assessment of the personality traits of an individual can be made through various inventories viz. 18PF7, NEO 5 Factor Inventory, California Psychological Inventory, Eysenck Personality Inventory, Maudsley Personality Inventory, Minnesota Multiphasic Personality Inventory, Jackson Personality Research Form, and Sixteen Personality Factor Questionnaire (Paul et al., 1986). It is generally agreed that some relationship exists between psychological factors and general bodily disorders. Furthermore, in recent years, a growing quantity of statistically evaluated research data has been presented to substantiate the fact that oral pathologic conditions could have psychological bases (Manhold, 1958). Although tumours constitute only a small minority of the pathologic conditions seen by the dentist, they are of great significance since they have the potential ability to jeopardize the health and longevity of the patient (William et al., 2006). Psychological or behavioural factors may influence the incidence or progression of cancer through psychosocial influences on immune function and other physiological pathways (Kiecolt-Glaser and Glaser, 1999). In Psychology, a major focus of research has been on the identification of personality factors that may predispose individuals to

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development of cancer. Studies by Contrada, Leventhal and O'Leary (1990), Fox (1998), Grossarth Maticek (1991), Eysenck (1991) supports the association of personality and other diseases (Manfred Amelang, 1997). Studies associating the personality factors that predispose individuals for the occurrence of tumours of the oral cavity are minimal. Hence this study aims to assess the association of various types of personality traits and the combination of traits with occurrence of the tumours of oral cavity

MATERIALS AND METHODS

Study Design: Case and Control - Comparative cross sectional study.

Study Setting: The study was carried out in a Government teaching Institute and Hospital in the state of Tamil Nadu.

Participants: A convenient sample of cases and controls were recruited from outpatient department of the Tertiary referral center.

Table 1. Distribution of study participants

| Group | Age | | | | | >65 | M | F | smk* | smkl* | Alcohol use | Family history |
|---------|-------|-------|-------|-------|-------|-----|----|----|------|-------|-------------|----------------|
| | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | | | | | | | |
| Case | 6 | 5 | 16 | 25 | 32 | 21 | 67 | 38 | 38 | 66 | 39 | 13 |
| Control | 5 | 6 | 17 | 27 | 34 | 21 | 69 | 41 | 38 | 67 | 40 | 14 |

* smk- smoking tobacco, smkl- smokeless tobacco

A sample size of 215 (Case= 105, Control=110) participants were recruited for the study duration of one year. Cases comprised of subjects diagnosed with tumour of the oral cavity (odontogenic or non-odontogenic/ benign or malignant tumours) and those who do not have any tumour at the time of screening for oral diseases were considered as controls. Participants who were mentally challenged, or with psychological or systemic illness, were excluded from the study. The controls were frequency matched for age, sex, pernicious habits (smoking and smokeless form of tobacco, alcohol usage), spicy diet, medical history of syphilis, family history of occurrence of tumour and presence of sharp tooth in relation to tumour on oral examination.

Consent: The study procedure was explained to the patients, information sheet was provided and written consent was obtained. Ethical clearance was obtained from the institutional review board.

Variables: Demographic details were recorded. For examining the personality of the patients, pretested Eysenck's Personality Questionnaire was used in English and in the local language. The Eysenck's Personality questionnaire assesses personality traits viz. Psychoticism, Extraversion, Neuroticism. The questionnaire consists of 90 questions of which 25 questions assesses Psychoticism, 21 questions Extraversion, 23 questions Neuroticism and 21 questions Lie. All of these questions were randomly placed, such that neither the patient nor the examiner can identify which question assesses which trait of personality. The answers were closed ended (Yes/No). The first reaction of the patient was recorded and not the long drawn out thought process. Thus investigator bias and reporting bias were eliminated. Based on the answers, the participants were categorized as either psychotic or normal (Psychoticism), extravert or ambivert or introvert (Extraversion), neurotic or average or stable (Neuroticism). And also every participant can also be a combination of the above traits.

Study size: A Pilot study was done with a sample of 30 cases and 36 controls matched and assessed for the association for personality trait. Based on the outcome the sample size was calculated as 105 in a group with 95% confidence interval and 90% as power of study.

Statistical method: Data was analyzed using SPSS version 17. The comparison between case and control group to determine association of personality traits was done using Pearson's Chi square test and risk of Odds was calculated.

RESULTS

Among the case group 13 of the patients had benign tumours and 92 patients had malignant tumours. Higher prevalence (30.5%) of oral tumours was seen among the elderly (above 55 years) and among males (63.8%). The prevalence of Psychotics, Introverts, Neurotics were more among the case group though Neurotic trait significantly associated with case group.

Table 2. Association of Personality Traits with Oral Tumours

| Personality Trait | Category | Case | | Control | | p value* |
|-------------------|-----------|------|------|---------|------|----------|
| | | No | % | No | % | |
| Psychoticism | Psychotic | 84 | 80 | 80 | 72.7 | 0.210 |
| | Normal | 21 | 20 | 30 | 27.3 | 0.210 |
| Extraversion | Introvert | 9 | 8.6 | 7 | 6.4 | 0.538 |
| | Ambivert | 85 | 81 | 91 | 82.7 | 0.736 |
| Neuroticism | Extrovert | 11 | 10.5 | 12 | 10.9 | 0.918 |
| | Stable | 8 | 7.6 | 9 | 8.2 | 0.879 |
| Lie | Average | 31 | 29.5 | 48 | 43.6 | 0.032 |
| | Neurotic | 66 | 62.9 | 53 | 48.2 | 0.030 |
| Lie | Normal | 0 | 0 | 0 | 0 | - |
| | Lie | 105 | 100 | 110 | 100 | - |

* Pearsons chi square test

Table 3. Combination of Personality traits and the association to Oral Tumour

| Combinations | Case | | Control | | p Value* |
|-------------------------------------|------|------|---------|------|----------|
| | No | % | No | % | |
| Psychotic, Introvert, Stable, Lie | 0 | 0 | 1 | 0.9 | 0.327 |
| Psychotic, Introvert, Average Lie | 2 | 1.9 | 2 | 1.8 | 0.963 |
| Psychotic, Introvert, Neurotic, Lie | 5 | 4.8 | 3 | 2.7 | 0.431 |
| Psychotic, Ambivert, Stable, Lie | 4 | 3.8 | 3 | 2.7 | 0.655 |
| Psychotic, Ambivert, Average Lie | 19 | 18.1 | 31 | 28.2 | 0.080 |
| Psychotic, Ambivert, Neurotic, Lie | 47 | 44.8 | 33 | 30 | 0.025 |
| Psychotic, Extrovert, Stable, Lie | 0 | 0 | 2 | 1.8 | 0.165 |
| Psychotic, Extrovert, Average Lie | 3 | 2.9 | 1 | 0.9 | 0.291 |
| Psychotic, Extrovert, Neurotic, Lie | 5 | 4.8 | 4 | 3.6 | 0.680 |
| Normal, Introvert, Stable, Lie | 1 | 1 | 0 | 0 | 0.305 |
| Normal, Introvert, Average Lie | 0 | 0 | 1 | 0.9 | 0.327 |
| Normal, Introvert, Neurotic, Lie | 1 | 1 | 1 | 0.9 | 0.974 |
| Normal, Ambivert, Stable, Lie | 2 | 1.9 | 3 | 2.7 | 0.689 |
| Normal, Ambivert, Average Lie | 5 | 4.8 | 9 | 8.2 | 0.310 |
| Normal, Ambivert, Neurotic, Lie | 8 | 7.6 | 11 | 10 | 0.539 |
| Normal, Extrovert, Stable, Lie | 1 | 1 | 0 | 0 | 0.305 |
| Normal, Extrovert, Average Lie | 2 | 1.9 | 3 | 2.7 | 0.689 |
| Normal, Extrovert, Neurotic, Lie | 0 | 0 | 2 | 1.8 | 0.165 |

* Pearsons chi square test

The combination Psychotic Ambivert Neurotic Lie is significantly associated with the case group. Risk of Odds was calculated for the personality traits and its combinations. The Psychotic Neurotic combination showed 2.162 and Neurotic trait and the combination Psychotic Ambivert Neurotic Lie had 1.82 risk for occurrence of the tumour of the oral cavity. The trait Average and the combination Ambivert Average had 0.5 risk for occurrence of the tumour of the oral cavity (risk reduced by one half).

DISCUSSION

In discussing the psychosomatic aspects of periodontal disease, Kanterman says: "The psyche, when subjected to emotional conflicts over long periods becomes an important factor in causing a chain of somatic reactions that result in pathologic changes. Such changes affect neural, vascular, and endocrine systems which play a very important role in maintaining the health of the oral tissues" (Charles, 1962). Grossart Maticek hypothesized that psychosocial factors (personality, stress) play an important part in the development of cancer and coronary heart disease. These factors are different for cancer and heart disease and can be measured in healthy people, leading to the postulation of personalities prone to cancer or coronary heart disease. This was supported with evidences by (Eysenck, 1992). Natural Killer (NK) cells play an important role in a variety of immune functions, including defence against viral infections and surveillance of tumour cells. NK cell cytotoxicity can be down regulated by stress, presumably through neuroendocrine mechanisms (Kiecolt-Glaser *et al.*, 2002). The trait of a person is nothing but the neuropsychic structure having the capacity to render many stimuli functionally equivalent and to initiate and guide equivalent (meaningfully consistent) forms of adaptive and expressive behaviour (Mary *et al.*, 2000). Clinical studies indicate that stress, chronic depression, social support and other psychological factors might influence tumour onset and progression. Recent mechanistic studies have identified biological signalling pathways that could contribute to such effects. Environmental and psycho-social processes initiate a cascade of information-processing pathways in the central nervous system and periphery, which subsequently trigger fight-or-flight stress responses in the autonomic nervous system, or defeat withdrawal responses that are produced by the hypothalamic pituitary adrenal axis. Cognitive and emotional feedback from cortical and limbic areas of the brain modulate the activity of hypothalamic and brain-stem structures that directly control hypothalamic pituitary adrenal axis and autonomic nervous system activity (Michael *et al.*, 2006). Neuroticism is a consistent predictor of health outcomes, with those higher (vs. lower) in neuroticism experiencing shorter life spans and a greater incidence of serious illness. Neurotics (vs. emotionally stable) are more likely to engage in lifestyle activities like smoking that lead to cancer (Adam, 2008; Nicola Cherry, 1976). Higher scores of neuroticism is associated with increased mortality (Robert *et al.*, 2005). Neurotic trait is found in patients with pituitary adenoma (Sievers *et al.*, 2009), cancer survival (Nakaya *et al.*, 2006), periodontitis (Alexandrina, 2010), smiles with disproportional gingival display (Pieter Van der Gelda *et al.*, 2007), xerostomia, stomatopyrosis, recurring aphthae, bruxism (Ivica Richter *et al.*, 2003), and dental caries (Manhold, 1958). This study has shown that the Personality trait Neurotic and the combinations of trait Psychotic Neurotic, Psychotic Ambivert

Neurotic Lie had higher risk for oral tumour. The personality trait Average and the combination of Ambivert Average had half the risk for oral tumour occurrence.

Conclusion

Personality trait especially Neurotic or Psychotic Neurotic may also be considered as a factor of risk for the occurrence of oral tumours. Assessment of personality of the patients along with the routine case record helps to identifying the patients at risk and lifestyle intervention can be planned in advance. Longitudinal studies assessing the risk shall warrant the research outcome.

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