IN BRIEF

- This manuscript is the first attempt to investigate potential links between dental treatment and the development of vCJD using case control methodology.
- The results highlight difficulties in collecting retrospective data from relatives of CJD cases regarding dental treatment history.
- Access to case and control dental records in the future may provide more useful information.

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Dental treatment and risk of vCJD

Dental treatment and risk of variant CJD – a case control study

D. Everington,¹ A. J. Smith,² H. J. T. Ward,³ S. Letters,⁴ R. G. Will⁵ and J. Bagg⁶

ABSTRACT

Objective

Knowledge of risk factors for variant CJD (vCJD) remains limited, but transmission of prion proteins via re-useable medical devices, including dental instruments, or enhanced susceptibility following trauma to the oral cavity is a concern. This study aimed to identify whether previous dental treatment is a risk factor for development of vCJD.

Design

Case control study.

Methods

Risk factor questionnaires completed by interview with relatives of 130 vCJD patients and with relatives of 66 community and 53 hospital controls were examined by a dental surgeon. Responses regarding dental treatments were analysed.

Results

There was no statistically significant excess of risk of vCJD associated with dental treatments with the exception of extractions in an unmatched analysis of vCJD cases with community controls ($p = 0.02$). However, this result may be explained by multiple testing.

Conclusions

This is the first published study to date to examine potential links between vCJD and dental treatment. There was no convincing evidence found of an increased risk of variant CJD associated with reported dental treatment. However, the power of the study is restricted by the number of vCJD cases to date and does not preclude the possibility that some cases have resulted from secondary transmission via dental procedures. Due to the limitations of the data available, more detailed analyses of dental records are required to fully exclude the possibility of transmission via dental treatment.

EDITOR'S SUMMARY

Variant Creutzfeldt-Jakob disease (vCJD) has caused considerable public concern due to its link with BSE-contaminated beef products and evidence that it can be transmitted by blood transfusions. The fact that the prion protein responsible for vCJD can be found and transmitted in blood raises the question of cross infection during routine healthcare procedures such as dental treatment. Previous studies have not shown dental treatment to be a risk factor for the sporadic form of CJD. This paper by Everington *et al.* is the first study to date to look at whether dental treatment is a risk factor for variant CJD.

The paper's findings are encouraging: the analysis of interviews with the relatives of 130 vCJD patients and 66 community and 53 hospital controls showed no significant increase in risk of vCJD associated with dental treatment. The authors acknowledge that the study is limited by its reliance on reported data from relatives and by the number of vCJD cases to date, and more detailed research is being investigated. However, it is important to note that the study assumes that infection control procedures are in place, fully complied with and not significantly less effective than they are expected to be. The authors state that the results do not preclude the possibility that some cases of vCJD have arisen because of secondary transmission through dental treatment. If anything, this work emphasises the need for infection control procedures in dentistry to be carefully considered and strictly adhered to.

While more detailed studies are required in order to confirm that dental treatment is not a risk factor for vCJD, this work is an important first step and goes some way towards reassuring patients and practitioners that as long as infection control measures are in place and fully complied with, the risk of a patient contracting vCJD as a result of dental treatment is extremely small.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 202 issue 8.

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FULL PAPER DETAILS

¹Statistician, National Creutzfeldt-Jakob Disease Surveillance Unit, The University of Edinburgh, Western General Hospital, Crewe Road, Edinburgh, EH4 2XU; ²Senior Lecturer in Microbiology, Infection Research Group, University of Glasgow Dental School, 378 Sauchiehall Street, Glasgow, G2 3JZ; ³Consultant Epidemiologist, National Creutzfeldt-Jakob Disease Surveillance Unit, The University of Edinburgh, Western General Hospital, Crewe Road, Edinburgh, EH4 2XU; ⁴Visiting General Dental Practitioner, Infection Research Group, University of Glasgow Dental School, 378 Sauchiehall Street, Glasgow, G2 3JZ; ⁵Professor of Clinical Neurology, National Creutzfeldt-Jakob Disease Surveillance Unit, The University of Edinburgh, Western General Hospital, Crewe Road, Edinburgh, EH4 2XU; ⁶Professor of Clinical Microbiology, Infection Research Group, University of Glasgow Dental School, 378 Sauchiehall Street, Glasgow, G2 3JZ

*Correspondence to: Dr Andrew J. Smith

Email: a.smith@den.dental.gla.ac.uk

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AUTHOR QUESTIONS AND ANSWERS

1. Why did you undertake this research?

The research was undertaken to determine if there was a link between previous dental treatment and development of vCJD. It has been postulated that although dental treatment involves contact with tissues that have low levels of infectious prion proteins, the large numbers of dental interventions may represent a risk factor at population levels either through cross contamination and/or trauma to the oral cavity resulting in an increased susceptibility by an as yet undetermined aetiology. It is important to exclude dental treatment as a risk factor for development of vCJD.

2. What would you like to do next in this area to follow on from this work?

In order to obtain more robust data (as opposed to data obtained from interview of relatives) we wish to review the dental records of CJD cases and controls. This exercise is currently underway as a pilot study to assess the logistics of recovering dental records from a small cohort of CJD patients and appropriate control.

COMMENT

Four types of human prion disease are presently recognised, of which sporadic Creutzfeldt-Jakob disease (CJD) is probably the most common. Variant CJD (vCJD) has attracted particular attention in view of its arising principally in young adults, variable clinical features, geographic clustering of affected individuals (eg in the UK), wide distribution of prion protein outside the neural system and probable transmission via blood transfusions.^{1,2}

Published data suggest that dentistry is a very unlikely route of transmission of prion disease and this case control study indicates that there is unlikely to be an association between previous dental health care and potential acquisition of prions causing vCJD. Although prions have been detected in oral tissue of appropriate experimental animals and/or individuals with vCJD, there is no evidence that prions can be spread as a consequence of exposure³ to oral fluids, nor via social or sexual contact. Hence despite the self acknowledged limitations of their study, the findings of Everington and co-workers are perhaps unsurprising and potentially reassuring to both patients and oral health care staff.

While it is not known if a further wave of vCJD infections will emerge, the present epidemiological data do not support the notion that prion transmission is likely to occur during dental care. For now, the risks of prion transmission during dental care should be considered to be extremely low – as detailed in the Department of Health's risk assessment⁴ – provided of course that currently advised infection control measures are adhered to.

S. R. Porter, Professor of Oral Medicine,
UCL Eastman Dental Institute

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