

Summary of: Risk factors for variant Creutzfeldt–Jakob disease in dental practice: a case–control study

A. M. Molesworth,¹ A. J. Smith,² D. Everington,³ F. Ord,⁴ P. Watt,⁵
R. G. Will⁶ and H. J. T. Ward⁷

FULL PAPER DETAILS

¹Senior Epidemiologist, National CJD Research and Surveillance Unit, University of Edinburgh, Western General Hospital, Edinburgh, EH4 2XU; ²Andrew Smith FRCPATH, Professor of Clinical Microbiology, College of Medical, Veterinary and Life Sciences, University of Glasgow, 378 Sauchiehall Street, Glasgow, G2 3JZ; ³Statistician, ⁴Dental Hygienist, ⁵Dental Hygienist, ⁶Professor of Neurology, ⁷Consultant Epidemiologist, National CJD Research and Surveillance Unit, University of Edinburgh, Western General Hospital, Edinburgh, EH4 2XU

*Correspondence to: Anna Molesworth
Email: anna.molesworth@ed.ac.uk;
Tel: +44(0)131 537 1980

Refereed Paper

Accepted 18 September 2012

DOI: 10.1038/sj.bdj.2012.1089

©British Dental Journal 2012; 213: E19

Objective To assess the risk of variant Creutzfeldt–Jakob Disease (vCJD) associated with dental treatment. **Design** Case-control study, investigation of links between cases. **Setting** National CJD surveillance, general dental practice and practice boards in Great Britain, 2008–2009. **Methods** Variant CJD cases were recruited from all those referred between May 1995 and August 2009 ($n = 160$); controls were recruited from the general population in 2003 using randomly selected geographic clusters and age-weighted sampling of individuals ($n = 584$). Risk factors were ascertained from dental records, with consent, using a structured questionnaire. **Results** Dental records were available for fewer cases (49%, 78 out of 160) than control subjects (78%, 457 out of 584). Variant CJD cases were no more or less likely than control subjects to have undergone dental treatment ($p \geq 0.05$). Two cases had attended the same dental practice, but the type and timing of treatments did not provide strong evidence that this was linked to the route of transmission. **Conclusion** There is no evidence of a vCJD risk associated with dental treatment, but because dental information is limited we cannot exclude this possibility. Improved methods for dental record keeping are recommended to aid future investigations of associations between infectious diseases and dental treatment.

EDITOR'S SUMMARY

CJD blood fears heightened (BBC News, September 2000); *CJD crisis to come* (Daily Mail, November 2000); *CJD alert over health records* (The Guardian, April 2003); *CJD in 'time bomb' fears* (The Sun, August 2004); *Dentists warned over CJD risk to patients* (Telegraph, April 2007); *More patients at risk from CJD after surgery* (Newsnight Science Editor, March 2011).

Fear, crisis, warn, risk, scare....not words we want the general public to associate with their health, particularly with dental treatment. Yet this is the reality faced by the public when confronting news stories about vCJD – one can't help but PANIC. As Dr Richardson points out in her excellent commentary: vCJD is spine-chilling, horrific, scary stuff. Dental professionals must be, and are, aware that there is a real risk involved here and people have a genuine fear.

No one wants to become infected with vCJD and no dental professional wishes to be responsible for causing infection. However, proportion is key. As at 5 November 2012, there have been no reported deaths due to vCJD in the UK this year.¹ There were five deaths due to vCJD in the UK during 2011. The total number of reported cases of vCJD (definite or probable) since 1990 has been 176. To put this into further context there were 90 deaths due to sporadic CJD and 14 deaths due to genetic CJD in the UK during 2011. Despite being the most common type of CJD, sporadic CJD is itself very rare, affecting only one in every million people in any given year in the UK.

This *BDJ* study thoroughly investigated almost half of all cases of vCJD in the UK (those with GDP or NHS records available before onset) and it found no evidence of a causal link between the disease and dental treatment. However,

poor availability of dental records (a whole other story!) means that we still can't completely rule out the possibility of the risk.

So dentistry is low risk and the probability of contracting vCJD is itself extremely low. How much is the risk of infection costing UK dentists? At what point can we stop worrying?

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 213 issue 11.

Ruth Doherty
Managing Editor

1. All CJD statistics quoted from the National CJD Research & Surveillance Unit, <http://www.cjd.ed.ac.uk/aboutus.html>

DOI: 10.1038/sj.bdj.2012.1108

TO ACCESS THE BDJ WEBSITE TO READ THE FULL PAPER:

- BDA Members should go to www.bda.org.
- Click the 'login' button on the right-hand side and enter your BDA login details.
- Once you have logged in click the 'BDJ' tab to transfer to the BDJ website with full access.

IF YOUR LOGIN DETAILS DO NOT WORK:

- Get a password reminder: go to www.bda.org, click the login button on the right-hand side and then click the forgotten password link.
- Use a recommended browser: we recommend Microsoft Internet Explorer or Mozilla Firefox.
- Ensure that the security settings on your browser are set to recommended levels.

IF YOU HAVE NOT YET SIGNED UP TO USE THE BDA WEBSITE:

- Go to www.bda.org/getstarted for information on how to start using the BDA website.

IN BRIEF

- Investigates the risk of vCJD associated with dental treatment.
- Provides no evidence of a causal link between vCJD and dental treatment, though possibility cannot be excluded due to poor availability of dental records.
- Recommends that improvements in dental records keeping are required.
- Supports policies which continue to drive improvement in standards of cleaning of re-usable dental instruments.

COMMENTARY

Human prion diseases are spine-chilling as they share many features with diseases more commonly seen in science fiction rather than science: the infective agent is just a small protein lacking nucleic acids but it cannot be denatured or killed by detergents, autoclaving or even acid treatment, and it infects the most precious of our organs, the brain. To complete the horror image you can become infected having dinner, be totally asymptomatic for over a number of years and finally, there is no effective form of therapy.

All these extraordinary features also make the study of prion diseases very challenging, which is clearly highlighted in the report by Dr. Molesworth *et al.* in this issue. The researchers assessed the risk of patient-to-patient transmission of variant Creutzfeldt-Jakob Disease (vCJD) in association with dental treatment using the National CJD surveillance, general dental practice and practice boards databases and records. All 160 vCJD cases referred between May 1995 and August 2009 were analysed and compared to 548 control cases. This is the most thorough and systematic effort made to date to assess this important issue.

The present study could provide no evidence of an association between dental treatment and vCJD. In fact, the vCJD cases had experienced fewer root canal treatments than the control group, the treatment considered to have the highest risk for transmission. However, dental records were available

for only half of the vCJD cases and the majority of data were for less than five years prior to onset, which is very short compared to the vCJD incubation time. Therefore, unfortunately, the risk for cross-infection cannot be excluded even with this data. In practice this means the need for use of disposable instruments when treating patients with presumed prion disease. However, the cases diagnosed with a potentially contagious infectious disease are just the tip of the iceberg and the majority of infected patients come to us without knowledge of their disease. Therefore, the standards of decontamination in routine dentistry need to be kept high when using re-usable dental instruments. At the same time, it is our responsibility to keep good dental records of our patients for their lifetime to allow good quality results for analysis like this in the future.

Dr Riina Richardson, DDS, PhD, FRCPath
Senior Clinical Research Fellow
and Honorary Consultant in Medical
Microbiology and Infectious Diseases
University of Manchester,
School of Translational Medicine and
University Hospital of South Manchester,
Wythenshawe Hospital

AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

There are many uncertainties in determining the risk of vCJD associated with dental treatment. Previous studies investigating this association have relied upon data collected by interview with patients' relatives. To improve the evidence base for or against such an association, in this study we obtained information (where available) directly from the dental records. We looked for geographic and temporal links between cases, and also compared vCJD cases and controls to assess the risk.

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

Our ability to draw definitive conclusions was compromised by the lack of availability of dental records especially for vCJD cases and those records greater than ten years old at the time of the study. In order to accumulate an evidence base for links (or not) between infectious diseases and dental surgery it is vital that accurate and contemporaneous records of treatment are kept and maintained for several decades. This is especially important for diseases with long incubation periods. It would be expedient if further work were funded to investigate options for improving the availability of dental treatment records and the possibility of patients retaining records of their treatment.