

## Comparison the Oral Candida Carriage in Type 2 Diabetic and Non Diabetics

Abbas Ali Jafari<sup>1</sup>, Elham Khanpayah<sup>2</sup>, Hakimah Ahadian<sup>3,\*</sup>

<sup>1</sup>Medical Parasitology and mycology Department, Medical School, Shahid Sadoughi University of Medical Sciences, Yazd, IR Iran

<sup>2</sup>Department of Orthodontics, Dentistry School, Shahid Sadoughi University of Medical Sciences, Yazd, IR Iran

<sup>3</sup>Department of Oral Medicine, Dentistry School, Shahid Sadoughi University of Medical Sciences, Yazd, IR Iran

\*Corresponding author: Hakimah Ahadian, Oral medicine Department, Dentistry school, Shahid Sadoughi University of Medical Sciences, Yazd, IR Iran. Tel: +98-3516255881, E-mail: drahadian@ssu.ac.ir.

**Received:** October 09, 2012; **Revised:** January 11, 2013; **Accepted:** February 17, 2013

**Keywords:** *Candida albicans*; Diabetes Mellitus

Dear Editor

Diabetes mellitus is a common and global epidemic in the new millennium, which is strongly related to life-style and economic change, caused chronic hyperglycemia with impairment of carbohydrate, lipid and protein metabolism resulting from defects in insulin secretion and action. The World Health Organization (WHO) has expected an increasing development of diabetes to more than 300 million by the year 2025; particularly, with type 2 diabetes mellitus (1). However, T2DM was known as an adult-onset of diabetes in the past, but it has dramatically increasing more recently in young people and known for about 90% of the global incidence of diabetes and its complications (2).

*Candida* infections, in particular, oral candidiasis has also been frequently recognized in diabetic patients, which can be due to their increased glucose in their oral fluids and their immune dysfunction (3, 4). Environmental alteration of diabetic oral cavity favors of *Candida* colonization and cause a change from the harmless commensally existence to a pathogenic state that known as predisposing factors for *Candida* infection. In this study, we compare the oral *Candida* carriage rate of 40 diabetic and 40 non diabetic by culture of their saliva samples and performing colony forming unit technique.

Our data showed a higher oral *Candida* carriage rate in type two diabetics in compare with the non-diabetic

control group (Table 1). Spearman correlation test also showed statistically significant differences between the duration of diabetes and colonization of *Candida albicans* in their saliva ( $P = 0.0341$ ), however there wasn't seen any correlation between fasting blood-glucose level and oral *Candia* colonization in diabetic group ( $P = 0.512$ ).

Different oral *Candida* carriage rates were reported in most studies, which could be as a result of different sampling procedures (such as, whole saliva collection, swabs, water and buffer rinsing and etc) used by different investigators. The whole saliva sample collection and colony forming unit (CFU) technique used in present study is a sensitive technique, which is usually used for estimating the oral *Candida* carriage and also for clinical diagnosis of oral candidiasis (3, 4). Current study has affirmed that *Candida* colonization is more prevalent in the oral cavity of type 2 diabetics than non-diabetics subjects as reported by various studies (5-7). There wasn't seen any association between FBS level and oral *Candida* colonization in type 2 diabetics saliva however Khosravi et al. reported a significant relationship between oral yeast density of diabetic patients and their fasting blood glucose level (8). A higher colonization of *Candida* in diabetics with longer history of diabetes was seen ( $P = 0.0341$ ), which supported by few other similar studies (5, 9, 10). Results of present study indicated a higher oral *Candida* carriage in type 2 diabetics and recommended more attention for controlling of diabetes.

### Implication for health policy/practice/research/medical education:

Results of present study indicated a higher oral *Candida* carriage in type 2 diabetics and recommended more attention for controlling of diabetes.

**Table 1.** Oral *Candida* Carriage in Type 2 Diabetic and Non-Diabetic Subjects

Subjects	No. of Cases With Oral <i>Candida</i> Carriage	No. of Cases Without Oral <i>Candida</i> Carriage	Total
<b>Non-diabetic</b>			
Female	5 (23.8)	16 (76.2)	21
Male	4 (21.05)	15 (78.95)	19
Total	9 (22.5)	31 (77.5)	40
<b>Type 2 Diabetic</b>			
Female	11 (55)	9 (45)	20
Male	13(65)	7 (35)	20
Total	24 (60)	16 (40)	40

## Acknowledgements

The authors would like to thank Dr Afkhami and his personnel of Diabetes research centre for their cooperation in sample collection and also Farzaneh Mirzaei for her kind help in the laboratory works.

## Authors' Contribution

None declared.

## Financial Disclosure

None declared.

## Funding/Support

This work is a part of a dentistry student thesis (no 383), which supported by Deputy of research from Shahid Sadooghi University of Medical Sciences.

## References

1. Diabetes—a global threat. *Lancet*. 2009;**373**(9677):1735.
2. WHO Technical Report Series. *Prevention of diabetes mellitus*; Geneva: WHO Publications; 1994.
3. Sahin I, Oksuz S, Sencan I, Gulcan A, Karabay O, Gulcan E, et al. Prevalence and risk factors for yeast colonization in adult diabetic patients. *Ethiop Med J*. 2005;**43**(2):103-9.
4. Samaranyake LP, MacFarlane TW. Host factors and oral candidosis. *Oral candidosis*. 1990:66-103.
5. Bai KY, Reddy CD, Abu-Talib SH. Oral candidal carriage in young insulin dependent diabetics. *J Indian Soc Pedod Prev Dent*. 1995;**13**(1):20-3.
6. Kumar BV, Padshetty NS, Bai KY, Rao MS. Prevalence of *Candida* in the oral cavity of diabetic subjects. *J Assoc Physicians India*. 2005;**53**:599-602.
7. Willis AM, Coulter WA, Fulton CR, Hayes JR, Bell PM, Lamey PJ. Oral candidal carriage and infection in insulin-treated diabetic patients. *Diabet Med*. 1999;**16**(8):675-9.
8. Khosravi AR, Yarahmadi S, Baiat M, Shokri H, Pourkabireh M. Factors affecting the prevalence of yeasts in the oral cavity of patients with diabetes mellitus. *J Med Mycol*. 2008;**18**(2):83-88.
9. Lotfi-Kamran MH, Jafari AA, Falah-Tafti A, Tavakoli E, Falahzadeh MH. *Candida* Colonization on the Denture of Diabetic and Non-diabetic Patients. *Dent Res J (Isfahan)*. 2009;**6**(1):23-7.
10. Tekeli A, Dolapci I, Emral R, Cesur S. *Candida* carriage and *Candida dubliniensis* in oropharyngeal samples of type-1 diabetes mellitus patients. *Mycoses*. 2004;**47**(7):315-8.