Diagnosed duration of type-2 diabetes mellitus and periodontitis

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INTRODUCTION

Diabetes Mellitus has significant impact upon tissues throughout the body, including the oral cavity

DM, especially when poorly controlled, increases the risk for periodontitis

- **Duration of DM - associated with peridontitis**

  (Glavind et al. 1969)

- **Duration of DM - not associated with periodontitis**

  (Sandberg et al. 2000, Alpagot et al. 2001)

Epidemiological and clinical aspects of periodontal disease in diabetics

W. Aubrey Soskolne

For both IDDM and NIDDM there does not seem to be any correlation between the prevalence or the severity of periodontal disease and the duration of diabetes.

Sir Austin Bradford HILL

Bradford Hill Criteria for Causal Interpretation – Risk Factors

Consistency of association

Strength of association

Time sequence correct

Specificity of associations

Degree of exposure (Dose-Response Effect)

Biologic plausibility

Supported by experimental evidence

OBJECTIVES

**To assess the association
between
diagnosed duration of type-2 DM
and
periodontal status**

METHODS

Subjects

Type-2 Diabetic Patients

Age 40-70 years

Attending an out-patient Diabetic Clinic at Tung Wah Eastern Hospital

At least one tooth per sextant

METHODS

Exclusion criteria

Smoking

Pregnancy

Receiving antimicrobial therapy in previous 6 months

Receiving periodontal therapy in preceding 6 months

Requiring antibiotic prophylaxis for periodontal probing

Incomplete patient records

METHODS

Clinical Examination: One calibrated examiner

Manual probing

Oral Hygiene Index (Greene & Vermillion 1960)

- Debris Index (DI)

- Calculus Index (CI)

Gingivitis Index (GI) (Jackson 1965)

Probing pocket depth (PPD)

Probing attachment level (PAL)

METHODS

Diagnosed duration of type-2 DM

Determined from patients' clinical records on day of examination

METHODS

(Diabetic) Metabolic Control

**Determined from patients' %HbA$_1$C
on day of examination**

Good: ≤ 7.1%

Fair: 7.2 – 8.3%

Poor: > 8.3%

Ko et al. 1998

METHODS

Independent t-tests: differences between group means

Pearson correlation coefficient: associations

Fischer's exact test: differences in prevalence between groups

METHODS

Ethical Approval

    Ethics Committee, Faculty of Dentistry, The University of Hong Kong

    Ethics Committee, Tung Wah Eastern Hospital

Written consent

RESULTS

Patients

172 type-2 DM

Non-smoking

Age: 56 (±8.9) years

Females: 52.6%

On Diabetic Medications: 63.5%

RESULTS

Mean No. Missing Teeth: 6.6 (±4.7)

Periodontal status

Mean

      GI: 1.7 (±0.5)

      DI: 1.6 (±0.5)

      CI: 1.5 (±0.6)

      PPD: 2.5 (±0.9) mm

      PAL: 3.5 (±1.2) mm

Severe Periodontitis (Tsai *et al*. 2002)

      2 sites PAL≥6mm

                       - 71%

RESULTS

Diagnosed duration of type-2 DM

6.3 (±5.2) years

55% ≤ 5 years

RESULTS

Correlations, controlling for sex and age:

DM duration with mean GI
  r=0.152, p<0.05

DM duration with mean PAL
  r=0.171, p<0.01

RESULTS

Correlations of DM duration and periodontal conditions by metabolic control groups :

Good (n=91): Mean %HbA$_1$C = 6.4 (±0.6)

Fair (n=68):   Mean %HbA$_1$C = 7.6 (±0.3)
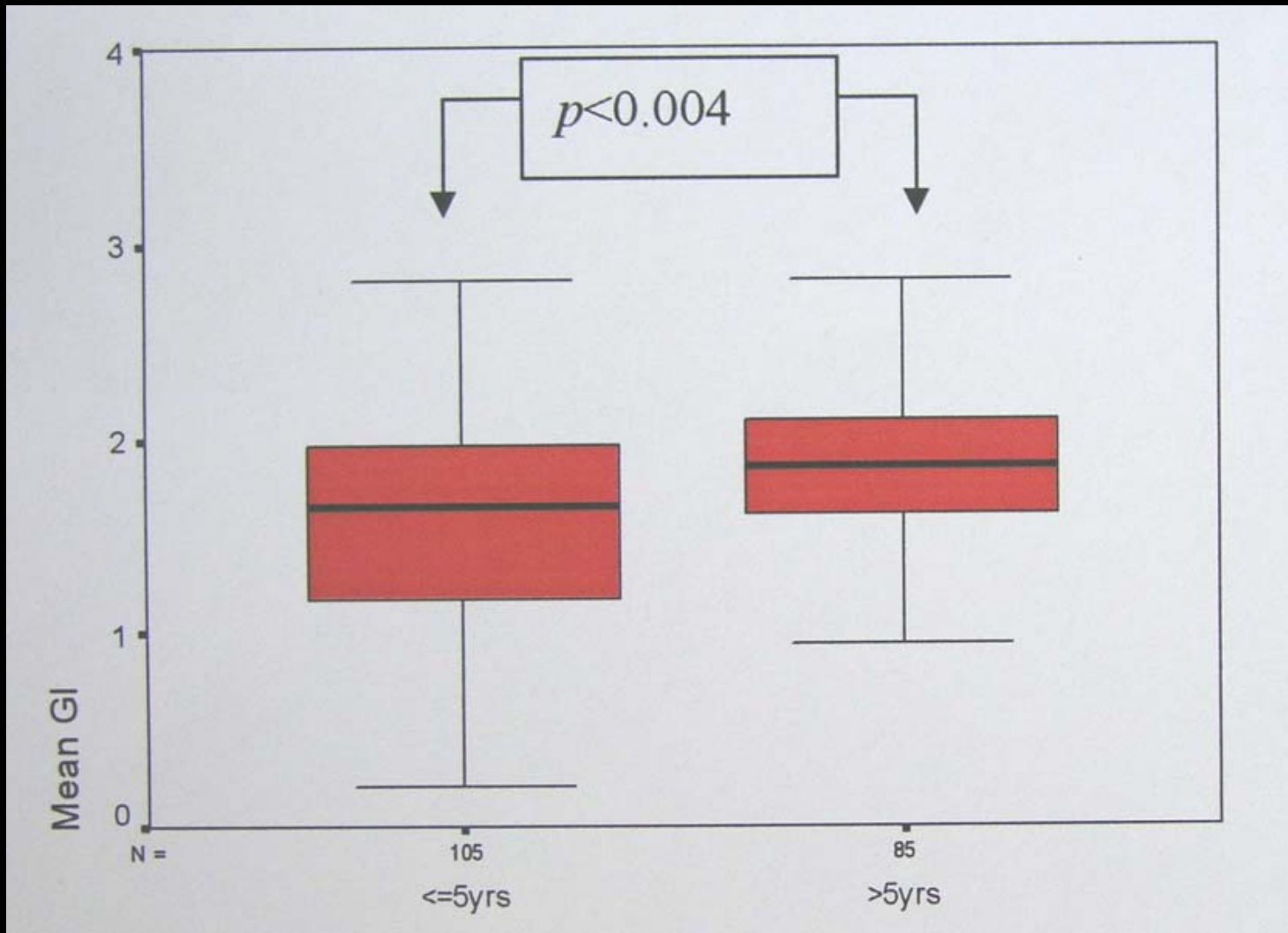
Poor (n=49): Mean %HbA$_1$C = 9.7 (±1.7)

Good –

   DM duration with mean GI: r=0.29, p<0.05
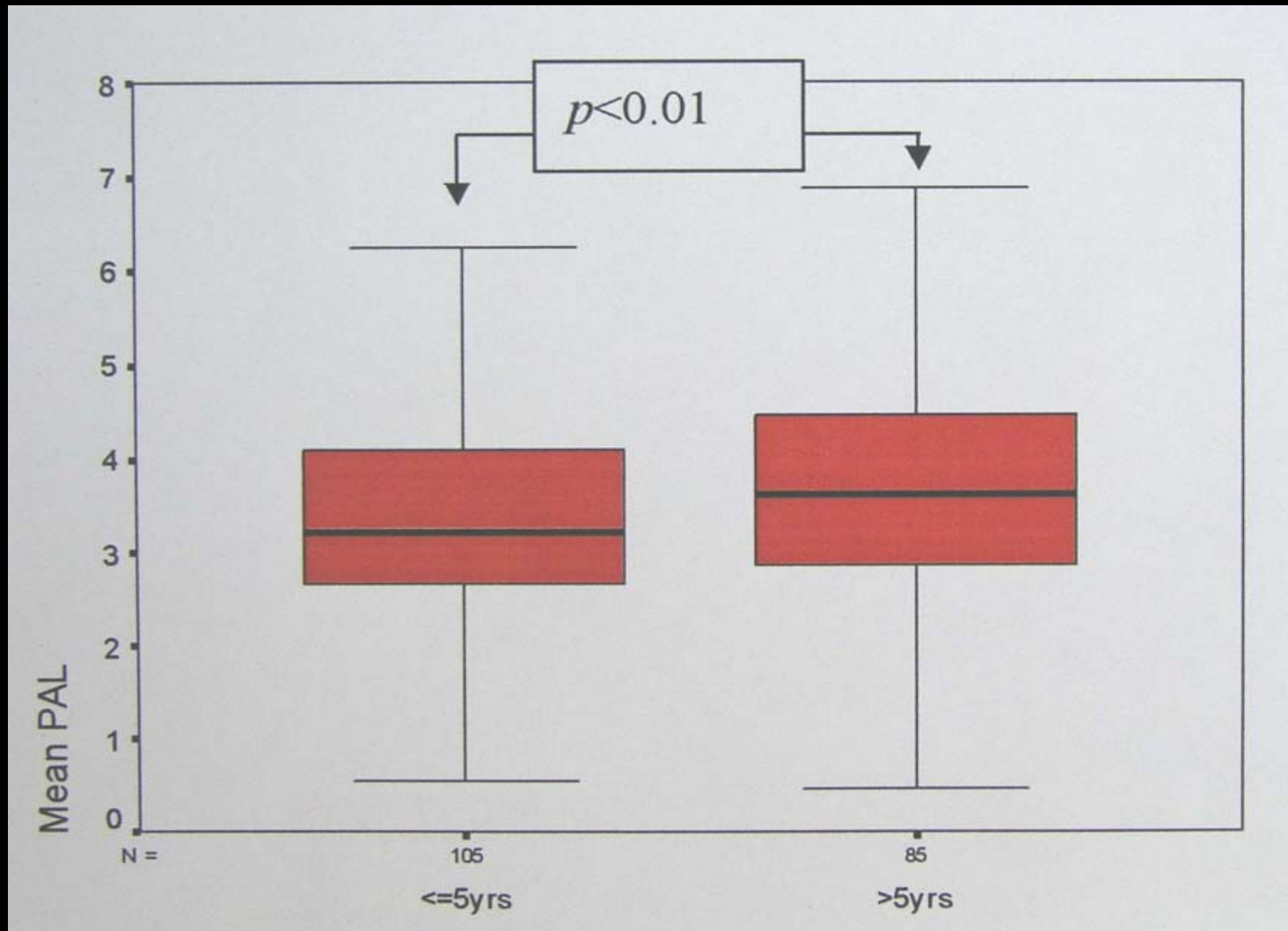
   DM duration with mean PPD: r=0.22, p<0.05

   DM duration with mean PAL: r=0.277, p<0.05

Mean GI by DM Duration
≤5 or >5 years

Mean PAL by DM Duration
≤5 or >5 years

RESULTS

Proportion with 'Severe Periodontitis' (≥2 sites with PAL ≥6mm)

by DM duration (categorized)

≤5 years : 83/125 (66%)

>5 years : 42/53 (79%)*

*P> .0.05

RESULTS

DM duration (categorized) and metabolic control

$\leq$5 years: %HbA$_1$C=7.2

>5 years: %HbA$_1$C=7.9*

*P<0.01

CONCLUSION

Type-2 DM diagnosed duration
controlling for age and sex,
and accounting for metabolic control,
was associated with periodontitis

- current gingival status

- periodontal attachment loss
experience

Acknowledgements