



Title	Cell cycle regulatory proteins and oral squamous cell carcinoma development
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Citation	76th General Session and Exhibition of the International Association for Dental Research, Nice, France, 24-28 June 1998, v. 77 n. Sp B, p. 791
Issued Date	1998
URL	http://hdl.handle.net/10722/54183
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1273 Cost of Endodontic Procedures in a French Dental School
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Clinical costs, in recent years, have become an important consideration of dental care, and many recent studies have evoked the problem of cost management in dental schools. The aim of this study is to evaluate the cost of endodontic procedures in a predoctoral clinic, by the identification of the different cost components.

During one school year (between October 1996 and July 1997), the number and duration of appointments, the clinical data, and the consumption of materials have been registered on two separate forms for endodontic procedures on first and second molars. The use of a rubber dam was systematic and the obturation material was gutta percha (in most cases, the obturation technique was warm vertical condensation). Clinicians were fourth year and fifth year dental students.

The survey takes into account the fixed, variable, direct and indirect costs and is based on 458 appointments. There is no achievement of root canal therapy (root canal obturation) in 19% of the cases. The duration of treatment (average time is 8h38min) constitutes 70.55% of the cost. A significant difference is found ($P < 0.01$) between average costs for initial treatment (equivalent to US \$257.79) and endodontic retreatment (equivalent to US \$345.67). The cost of initial treatment is 3.78 times greater, and the cost of endodontic retreatment is 5.08 times greater, than the French health-care legal values (equivalent to US \$67).

The study shows that there is a disproportionate divergence between the cost of endodontic procedures performed in dental school and the French health-care legal values.

1274 Enrichment Program For Part-time Faculty: Qualitative Assessment of Needs.
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Tufts Dental School has a total of 398 faculty members, 332 (83%) of whom teach three or fewer days per week in the School's clinics. The objective of this study was to determine the needs of these part-time faculty members (PTF) in relation to their teaching activities. It was felt that discussions rather than a survey would be more productive and personal. Therefore, during the summer of 1997, five groups of self-selected faculty members (30% of PTF) met to discuss issues related to their needs.

The results indicated that the following areas were of high priority:

1. Communication: they expressed the need for more faculty interaction within departments, between departments and with administrators through meetings and written communication.
2. Training: they expressed the need for training programs, especially on clinical teaching and evaluation techniques.
3. Orientation: they expressed the need for discussion sessions and written materials, concerning school policies and procedures.
4. Appreciation: they expressed the need for greater recognition of their value to the teaching programs of the School.

Based on these results, faculty enrichment programs have been presented in such areas as clinical techniques, evaluation of student clinical performance and use of information technology in teaching. Mechanisms to increase the value and recognition of teaching have been introduced, e.g., certificates of appreciation. It can be concluded that this needs assessment study resulted in the development of programs that are enhancing the teaching skills and personal feelings of the part-time faculty.

1275 An evaluation of 8 years of Continuing Dental Education in the South of Ireland.
 L.A. Buckley,^{1,2} J. Gloster² (University Dental School, Cork, Postgraduate Medical and Dental Board, Ireland.)

The aim of this study was to assess the effectiveness of CDE provided by the Postgraduate Medical and Dental Board in the South and Mid-West Region of Ireland from 1986 - 1994 in terms of (1) attendance by dentists, (2) Course content, (3) Demography, (4) Satisfaction. In 1994, 436 dentists were registered on the Irish Dental Council register in the South West Region. A representative sample of 90 dentists completed a comprehensive 7 page Feedback Questionnaire devised by the Teaching Development Unit of University College Cork.

The findings of this survey: 102 CDE courses were delivered from 1986 - 1994 in 18 different local centres spread throughout the region. Lectures/Seminars comprised 85% of courses and practical hands-on courses comprised 15%. The respondents: 57% of respondents were general dental practitioners and 25% practised in Public Dental Services (Community Dentists). The remainder combined both and also worked in the Dental Hospital. There were 84% male and 16% female respondents and ages ranged from 25 years to 55 years (majority 65% were aged between 30 and 40 years). There was a high awareness, 95%, of Postgraduate Medical and Dental Board CDE courses and 92% had attended at least one course (> 65% attended more than 3 courses). There was a high satisfaction rate but respondents, 50%, requested more practical courses and 47% requested that courses be delivered locally. The conclusion from this Survey is that there is a high awareness and uptake of CDE in this region; that dentists feel the need for more practical (hands-on) courses which has implications for future planning.

1276 Cell cycle analysis in oral epithelial dysplasia.
 R J OLIVER* and D G MACDONALD (Oral Pathology Unit, Glasgow Dental Hospital)

Introduction: We investigated the relationship of the G1 cyclins D1 and D3, and K67 in oral epithelial dysplasia using monoclonal antibodies.

Methods: 38 cases of oral epithelial dysplasia were retrieved from the diagnostic service files. 4µm sections were cut and a standard immunohistochemical technique was employed following antigen retrieval in a domestic pressure cooker for two minutes in citrate buffer. Quantification was performed by counting the antibody labelled cells, the total number of cells, and the length of the basement membrane on three corresponding fields, in three immediately adjacent fields for each case. The degree of dysplasia was assessed according to the method of Smith and Pindborg (1969).¹

Results: The atypia scores ranged from 7 to 52 out of a possible 75. The mean labelling indices were as follows:

Cyclin D1	Cyclin D3	K67
31.28%	31.32%	29.60%
(0-59.41)	(0-76.24)	(12.63-73.12)
127.19 per mm	129.34 per mm	142.12 per mm
(0-312.09)	(0-449.01)	(58.68-653.35)

The D cyclin-labelled cell indices correlated with each other ($p < 0.0007$) and with the K67 per mm basement membrane ($p < 0.0073$), but not with the atypia scores.

Conclusions: The D cyclin labelling is high in oral epithelial dysplastic lesions, suggesting continued expression beyond the G1 phase of the cell cycle as it correlates with the cell-cycle associated protein, K67. There appears to be no association between D cyclin expression and the degree of dysplasia.

¹ Smith and Pindborg (1969) Hamburgers Bogtrykkeri C

1277 p53 Expression Differs in Experimental Oral and Tongue Carcinomas.
 G. SHKLAR*, J.L. SCHWARTZ and ANDRE BAPTISTE (Harvard School Dental Med and Howard U College Dent, Boston, and Washington, USA)

Lingual carcinomas in humans tend to behave more aggressively than carcinomas of other sites of the oral mucosa. This has also been confirmed in experimental models for oral carcinoma and tongue carcinoma in the hamster, where the lingual carcinomas are less differentiated than buccal pouch carcinomas and demonstrate early invasiveness and occasional metastasis to regional lymph nodes. Sixty Syrian hamsters (*Mesocricetus auratus*) were divided into three equal groups. Buccal pouch squamous cell carcinomas were induced in the group 1 animals by thrice weekly applications of DMBA (7,12 dimethylbenz[*a*]anthracene) in mineral oil for 12 weeks. Squamous cell carcinomas were induced on the posterior lateral border of the tongue in the Group 2 animals by thrice weekly applications of DMBA in acetone for 16 weeks. Group 3 animals were controls for pouch, painted thrice weekly with oil (10 animals) or tongue, painted thrice weekly with acetone (10 animals). Immunohistochemical studies of the carcinomas for expression of wild-type p53 (Ab-2 monoclonal antibody, Oncogene Research Products, Calbiochem; and avidin-biotin-peroxidase-antiperoxidase staining) demonstrated notable expression in the buccal pouch tumors (>50% positive cells) and low expression in the tongue carcinomas (<5% positive cells), suggesting a differing biological behaviour of the malignancies at the two sites. The p53 tumor suppressor gene may represent a molecular mechanism for controlling the well-differentiated form and low-grade biologic behaviour of the pouch carcinomas, while its relative absence could account for the anaplastic appearance and aggressive activity of the lingual carcinomas.

1278 Prevalence of Dysplasia and Malignant Lip Lesions in Transplant Patients.
 JM THOMASON*, N GIRDLER, A NOLAN, PJ KELLY, K BOOTH, RA SEYMOUR (Dental School, University of Newcastle upon Tyne & University of Teesside, UK).

The present study aims to determine the prevalence of dysplasia and malignant lip lesions in 403 adult organ transplant patients and a control group of 403 non-transplant patients attending for routine dental treatment. In addition, risk factors for these conditions were investigated. The study received local ethical approval and informed consent was obtained from each patient. Social and clinical data were collected using a structured examination record. Clinical lip lesions were biopsied (49) and were examined by a pathologist with no knowledge of the patients' medical history. Data were analysed using Fisher's exact test and logistic regression analysis as appropriate. Eight of the transplant patients (2%) had dysplastic lip lesions and a further 3 transplant patients (0.75%) had squamous cell carcinoma. In the control group only one patient (0.25%) had a positive dysplastic biopsy ($p = 0.004$).

Although transplant immunosuppression was identified as a risk factor for these changes (odds ratio = 11.28, $p = 0.02$), none of the immunosuppressive drug parameters including dosage and duration were associated with the prevalence of the condition in the transplant group. Other variables identified as risk factors included the number of packets of cigarettes smoked per week (odds ratio=1.1, $p = 0.01$) and the age of the patient (odds ratio 1.5, $p = 0.05$). Sunlight exposure, alcohol and spirit consumption were not identified as risk factors at the 5% level.

We can conclude that the prevalence of lip dysplasia and malignancy is significantly greater in transplant patients than in non-immunosuppressed controls. Important additional determinants for the condition in this group of patients include the number of cigarettes smoked per week and the age of the patient.

1279 Cell Cycle Regulatory Proteins and Oral Squamous Cell Carcinoma Development.
 M.L. SCHOELCH*, K.K. FU, S. SILVERMAN JR, A. MCMILLAN, N.P. DEKKER, Q.T. LE, B.L. ZIOBER, I. NG, J.A. REGEZI. (University of California, San Francisco, USA).

Expression of cell cycle regulatory proteins was evaluated in premalignant and malignant oral epithelial lesions, to test the hypothesis that protein regulation of the cell cycle may be altered in the development of oral squamous cell carcinoma. 90 archived paraffin-embedded specimens from 25 patients (2 or more sequential biopsies each) were evaluated in immunohistochemically stained sections for cell cycle regulatory proteins p53, Rb, Cyclin D1, and p21. The cell cycle was also evaluated for expression of nuclear protein Ki 67. Sections were graded according to the following scale: -, negative; +, < 33% of keratinocytes positive; ++, 33-66% of keratinocytes positive; +++, > 66% of keratinocytes positive. The initial histologic diagnosis for 17/25 patients was either focal keratosis, mild dysplasia, or moderate dysplasia; the initial diagnosis for the remaining eight patients ranged from severe dysplasia to moderately differentiated squamous cell carcinoma. 30 of 90 specimens showed positive p53 expression, 9 of which were evident in dysplasias. 80 of 90 specimens showed positive Rb expression. 22 of 90 specimens showed positive Cyclin D1 expression, typically in the later stages of a patient's disease. 80 of 90 specimens showed positive p21 expression. Analysis of staining intensity with disease progression in individual patients showed increased expression of p53, Rb, p21, and Ki 67 with disease progression. In control mucosa, Rb and p21 proteins were expressed at low levels; p53 and Cyclin D1 proteins were largely absent. These data show that cell cycle regulatory proteins are altered in both premalignant and malignant disease. p53 expression is seen early, and Cyclin D1 expression is seen late in the development of oral premalignant and malignant disease.

1280 Evaluation of Nuclear DNA Content and Ki-67 as Markers of Radiosensitivity in Head and Neck Squamous Cell Carcinoma (HNSCC).
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Treatment of HNSCC usually consists of radiotherapy, surgery, chemotherapy or a combination of these modalities. The TNM classification and patient related factors are generally used to orient therapy. However, these factors are not satisfactory: In some cases, small tumors may recur, whereas larger tumors may be controlled by radiotherapy. DNA-aneuploidy is recognized as a significant factor of poor prognosis in several solid tumor types. In the present study, the usefulness of the tumor DNA content and of the proliferation rate (Ki-67) at predicting recurrences, in patients with HNSCC, submitted to radiation therapy, have been investigated. Formalin-fixed, paraffin embedded, biopsies of HNSCC from 56 patients treated by radiation therapy were evaluated. The follow-up ranged from 8 to 62 months. DNA ploidy analysis was performed by static cytometry on smears of cell suspensions stained with feulgen. Adjacent sections of the same tumours were incubated with a Ki-67 primary antibody (MIB-1, Signet Laboratory) (dilution 1/50), in conjunction with the ABC technique and DAB. Sections of tonsils were used as positive controls. DNA-ploidy was correlated with the proliferation rate (Ki-67). Local relapses were more common in non-diploid tumors; 14/28 (50%) non-diploid tumors recurred, whereas only 3/28 (10.7%) diploid tumors had local failure ($p = 0.0019$). 12 out of 14 (85.7%) failures were from non-diploid tumors with a low proliferation rate (Ki-67 < 20%) ($p = 0.004$). DNA content and proliferation rate (Ki-67) appear as significant prognostic markers of radiosensitivity, for the treatment of patients with HNSCC.