

# Arterial Blood Pressure in Patients with Oral Lichen Planus

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*Abstract.* The arterial blood pressure of 121 patients with oral lichen planus was determined using the auscultatory method. These values were then compared with those previously found in a general adult population. No significant difference was found between the values of the lichen planus patients and those of the general population. The present investigation does not support the hypothesis of a relationship between lichen planus and hypertension.

*Received 21 July, accepted for publication 19 August 1976*

In 1949, Lynch concluded that cutaneous lichen planus was often associated with vascular hypertension. Subsequently other reports demonstrating an association between oral lichen planus and hypertension have been published (Grinspan et al. 1966, Howell & Rick 1973). A relationship between the two diseases is not obvious, but the nature of lichen planus is still unknown, and an association between lichen planus and hypertension cannot be rejected on the basis of the above-mentioned reports. The purpose of the present study was to measure the blood pressure in a group of patients with oral lichen planus and to compare the values with those of a general population sample.

### Material and Methods

The material comprised 121 patients with typical clinical and histologic features of lichen planus. The clinical diagnosis of li-

chen planus was made in the presence of one or several lesions of the reticular, papular, plaque, atrophic or erosive types (Andreasen 1968). Histologic diagnosis of lichen planus was made on the following criteria, of which the first and second were always present: A bandlike infiltrate of inflammatory cells consisting mainly of lymphocytes confined to the superficial layer of the lamina propria, abnormal keratinization (hyperorthokeratosis or hyperparakeratosis), liquefaction degeneration of the basal cell layer, a juxtaepithelial eosinophilic, cell-free zone and saw-toothed rete pegs (Andreasen 1968).

All the patients were seen in the Dental Department, University Hospital of Copenhagen for follow-up examination and consecutively referred to the Department of Internal Medicine for examination of the blood pressure. Of the 121 patients 85 were females and 36 males. The ages ranged from 20 to 89 years. Also, 32 % of the patients

showed cutaneous manifestations of lichen planus.

The patients were instructed not to take any medicine in the 3 days preceding the examination.

Blood pressure was read according to the recommendations of the Committees for the Standardization of Blood Pressure Readings of the American Heart Association and the Cardiac Society of Great Britain and Ireland (1939). The blood pressure was measured three times by the auscultatory method. The diastolic pressure was read at Phase V. In cases where this phase was not distinct, the diastolic pressure was read at Phase IV (muffling of the sounds). In case of varying readings in the same person the lowest pressure was recorded. Mercury manometers with a 13 cm wide cuff were used. The readings were made with the patient sitting on a chair with the forearm placed horizontally on a table. The recorded values of the systolic and diastolic blood pressures were classified according to sex and age in the groups 20-39, 40-59 and over 59 years. For each group the mean and the standard deviation were calculated.

The blood pressure levels of patients with various durations of lichen planus were compared in order to examine the possible influence of the lichen planus duration on the blood pressure.

The blood pressure values were compared with values found in Bergen (Bøe et al. 1957), where the blood pressures of 67,976 persons of the adult population were measured. One part of the examination (Group 1) concerned the Northern District, the second part (Group 2) covered the Southern District of Bergen. The blood pressure in Group 2 was generally slightly lower than in Group 1. For comparison the values of Group 2 were used. The blood pressure measurements were performed with the same technique as used in our examinations.

The t-test for comparison of two sets of

statistically independent observations was used with a significance level of 5 % (Hald 1952).

As an association between lichen planus, hypertension and diabetes has been reported (Grinspan et al. 1966, Howell & Rick 1973); the present oral lichen planus patients also had a glucose tolerance test done. Results from this investigation (Christensen et al. to be published) did not differ from values found in a general population.

### Results

The blood pressure values are presented in Table 1. Concerning the diastolic blood pressure, the standard deviations for females 40-59 years old and for males 20-39 and over 59 years old are significantly less in the lichen planus material than in the Bergen material. In no group, however, is any significant difference found between the means of the lichen planus material and the Bergen material.

Table 2 shows the blood pressure of the patients with a duration of lichen planus of 0-4, 5-9 and over 9 years respectively. No significant differences of the blood pressures between the three groups were found. It should be noted that the mean age increases with the longer duration of lichen planus.

### Discussion

The present investigation failed to demonstrate significant differences between the means of blood pressures of the lichen planus patients and the general adult population of Bergen. Both the Bergen and the Danish population are Scandinavian and differences in blood pressure levels of the Danish and the Bergen populations have not been reported and are not believed to exist. Likewise, no significant increase in blood pressure with increasing duration of lichen planus was demonstrated.

Table 1. Blood pressure levels of patients with oral lichen planus compared to those of the general adult population of Bergen. Number of examined persons (n), mean ( $\bar{x}$ ), standard deviation (sd).

		Blood pressure mm Hg										
		Lichen planus material			Bergen general population material							
Sex	Age (years)	n	$\bar{x}$	sd	n	$\bar{x}$	sd	$v^2$	P	t	P	
Systolic	♀	20-39	10	121.0	16.1	5961	122.2	13.9	1.34	> 0.1	0.27	> 0.1
		40-59	31	133.4	16.8	5121	139.6	21.0	1.56	> 0.1	1.64	> 0.1
		≥ 60	44	154.9	23.5	2019	161.5	27.6	1.38	> 0.1	1.57	> 0.1
	♂	20-39	12	121.7	12.3	3932	129.1	14.8	1.45	> 0.1	1.73	> 0.05
		40-59	12	135.8	20.8	3774	136.5	19.4	1.15	> 0.1	0.12	> 0.1
		≥ 60	12	152.9	27.1	1541	152.1	24.8	1.19	> 0.1	0.11	> 0.1
Diastolic	♀	20-39	10	75.5	15.7	5961	77.0	12.3	1.63	> 0.1	0.39	> 0.1
		40-59	31	83.4	8.7	5121	86.1	14.8	2.89	< 0.01	1.71	> 0.05
		≥ 60	44	89.5	14.8	2019	93.5	18.3	1.53	> 0.05	1.43	> 0.1
	♂	20-39	12	77.9	4.5	3932	80.1	13.1	8.47	< 0.01	1.67	> 0.1
		40-59	12	88.8	12.1	3774	85.1	14.5	1.44	> 0.1	0.88	> 0.1
		≥ 60	12	92.5	9.9	1541	90.9	17.3	3.05	< 0.05 > 0.01	0.55	> 0.1

The findings in this study are thus at variance with those of Lynch (1949) who, among 67 patients (both sexes) with cutaneous lichen planus found higher blood pressure values than in a control material consisting of males from prisons.

This discrepancy may be due to the differences in the materials examined. Lynch (1949) examined patients with skin lesions, while the present material comprised patients with oral lichen planus of which only 32 % also had cutaneous manifestations. Furthermore, the blood pressures of male prisoners may not be representative of the

blood pressures of the general population due to differences in age distribution.

Grinspan et al. (1966) and Howell & Rick (1973) have reported that oral lichen planus is often associated with vascular hypertension and diabetes. The authors neither published the results in detail nor did they provide criteria for hypertension. A direct comparison of their findings with ours is therefore impossible.

Since the borderline between normal and elevated blood pressure is a matter of definition, a direct comparison of the blood pressure distribution of the lichen planus

Table 2. Blood pressure levels of patients with different durations of lichen planus and comparison of the blood pressure levels in the different groups.

		Blood pressure mm Hg									
	Group	Duration of lichen planus (years)	Mean age (years)	n	$\bar{x}$	sd	Comparison of	$\chi^2$	P	t	P
Systolic	A	0-4	52.9	75	139.1	24.6	A and B	1.43	> 0.1	0.16	> 0.1
	B	5-9	54.9	25	140.0	20.7	A and C	1.02	> 0.1	1.23	> 0.1
	C	≥ 10	64.0	17	147.3	24.9	B and C	1.45	> 0.1	1.03	> 0.1
Diastolic	D	0-4	52.9	75	84.9	13.3	D and E	1.31	> 0.1	0.30	> 0.1
	E	5-9	54.9	25	85.8	11.6	D and F	1.14	> 0.1	1.07	> 0.1
	F	≥ 10	64.0	17	88.8	14.2	E and F	1.50	> 0.1	0.75	> 0.1

material with that of the general population was made.

On the basis of this comparison it was not possible to demonstrate any significant difference between the blood pressure levels in the present patients with oral lichen planus and those in the general population of Bergen. The hypothesis of a relationship between oral lichen planus and arterial hypertension therefore could not be supported.

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