

接触木尘对工人寿命的影响

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摘要 通过对某木材厂1972~1987年男工死亡材料的分析,发现该厂男工恶性肿瘤减寿高峰在45岁年龄组段,比当地居民早死10年。高浓度接尘组中(木工和机木工),恶性肿瘤标化减寿比为1.30, $P < 0.01$; 标化减寿率比为1.87, $P < 0.01$, 显著高于当地居民。而低浓度和非接尘组中,恶性肿瘤的标化减寿比和标化减寿率比未见升高。研究结果提示,长期接触高浓度木尘的工人,受恶性肿瘤的危害较严重。

关键词 木尘 恶性肿瘤 减寿比 减寿率比

为了探讨木尘对工人健康的危害,我们使用减寿年和减寿率研究方法,分析了北京市木材厂1972~1987年的人群死亡材料,以期为保护工人健康,制定防护措施提供科学依据。

间某种死因减寿对比的指标。

1.2.4 标化减寿率比(SRR) 根据相对危险度的原理计算,来定量描述各种疾病对不同人群危害程度的指标。

1 材料和方法

1.1 材料来源

本研究使用1987年对北京市木材厂进行回顾性队列调查的全部资料^[1]。

1.1.1 人群 为北京市木材厂1972年1月1日在册的全部男工,观察至1987年6月30日止。

1.1.2 病例 为队列观察期内25~70岁年龄组的全部死亡病例。

1.1.3 接触木尘和非接尘者 凡在该厂从事木工、机木工及其他接尘工(辅助工、车间干部等)1年以上者均列为接尘组;接尘不足1年和非接尘者(行政后勤、机关干部、库工、电工、钳工等)均列为非接尘组。

1.1.4 对照 采用丰台区1985年底居民人口统计数和1986年1~4季度居民死亡数为对比人群。该资料由丰台区卫生局居民死亡统计组提供。

1.2 分析指标

采用 Romeder 的减寿年和减寿率的方法。其统计指标如下^[2,3]。

1.2.1 减寿年 描述不同病种损失寿命的指标。

1.2.2 减寿率 比较不同人群、不同年代、不同死因在人群中分布的指标。

1.2.3 标化减寿比(SLLR) 采用标化死亡比的原理进行计算,作为职业人群与对比人群

2 结果

2.1 主要死因构成

该厂25~70岁工人的总人年为35842,共死亡313人,总死亡率873.28/10万。恶性肿瘤死亡率为253.89/10万,脑血管病死亡率为284.58/10万。从表1可见,接尘组死于恶性肿瘤者(82%)明显高于非接尘组(17%)。两组的组间差异非常明显($P < 0.01$)。其中以木工和机木工恶性肿瘤死亡最多。二者占全部肿瘤的68%。在接尘组和非接尘组中,死于脑血管病者无明显差异。其他死因中,包括心血管病36例,意外死亡16例。由于其他各病种数量很少,故未进一步分析。

2.2 全死因年龄死亡率和减寿比的比较

木材厂男工全死因减寿4722.5年。其中接尘工3093.0年,非接尘工1629.5年。全死因死亡率8.73%。

图1显示,全死因年龄别死亡率随年龄增高而升高,这与自然死亡规律相一致。但从减寿比曲线看,减寿高峰在45~60岁年龄组。这个年龄组的减寿年占总数的75%,说明该厂男工寿命损失主要在45~60岁。

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表1 主要死因构成

	恶性肿瘤	脑血管病	其它死因	合计
接尘组	75	52	77	204
机木工	24	11	28	63
木工	38	27	29	94
其它	13	14	20	47
非接尘组	16	50	43	109
合计	91	102	120	313

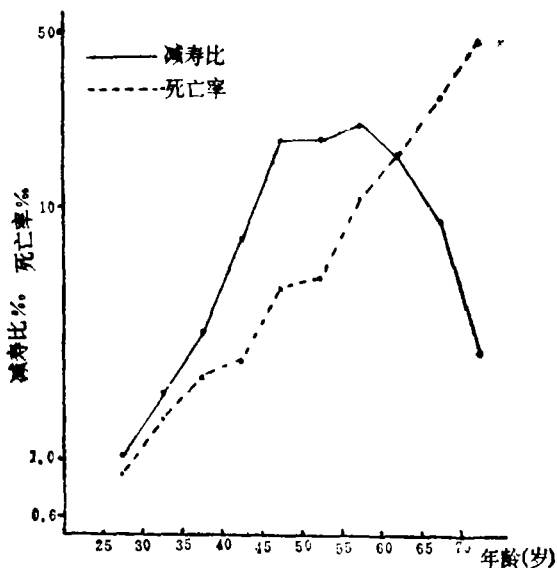


图1 木材厂男工全死因年龄死亡率和减寿比

表2 主要死因的标准化减寿比(SLLR)和标准化减寿率比(SRR)

	恶性肿瘤			脑血管病			其它死因		
	例数	SLLR	SRR	例数	SLLR	SRR	例数	SLLR	SRR
接尘组	75	1.15*	1.72*	52	0.67	0.72	77	0.59	0.75
机木工	24	1.41*	2.34	11	0.51	0.66	28	0.65	0.65
木工	38	1.22*	2.50*	27	0.71	1.89	29	0.51	0.90
辅助工	13	0.65	1.64	14	0.79	1.21	20	0.64	1.01
非接尘组	16	0.76	1.58	50	2.09*	1.95*	43	0.97	1.50*

*P<0.01

说明该工种因恶性肿瘤而死亡的危险性高于其他工种。

2.4 主要死因标准化减寿率比在人群中的年龄分布

图2为木材厂接尘男工与丰台区居民恶性肿瘤的标准化减寿率比。丰台区居民减寿率最高值为5.91%，高峰在55岁年龄组。接尘工人减寿率最高值为10.5%，高峰在45岁年龄组，比普通居民提前死亡10年。在脑血管病中，丰台居

2.3 主要死因的标准化减寿比(SLLR)和标准化减寿率比的相对危险度(SRR)

以丰台区1986年居民死因为标准(经统计分析,该区1979~1986各年肿瘤死亡率相对稳定),计算其标准化减寿比和标准化减寿率比相对危险度,其结果如表2。

从表2可见,非接尘组中,脑血管病和其他死因明显高于丰台区居民。而接尘组中,恶性肿瘤的标准化减寿比和标准化减寿率比均明显高于当地居民。也就是说,接尘工人恶性肿瘤标准化减寿比在0.01水准上,显著高于丰台区居民,为其1.72倍。

按工种分析其减寿年,发现恶性肿瘤的标准化减寿比、标准化减寿率比显著高于当地居民,而低浓度组(辅助工等)和非接尘组不明显。

民减寿率最高值为9.2%,高峰在60岁年龄组,而接尘工减寿率最高值为6.4%,高峰在65岁年龄组,见图3。以上说明恶性肿瘤是危害接尘工人健康,导致早死的主要原因。

3 讨论

在人类文明起步之初,几乎就伴随着对木材的加工使用。但是现代化的木材加工,带来的对工人健康的危害,近来才为人们所重视。

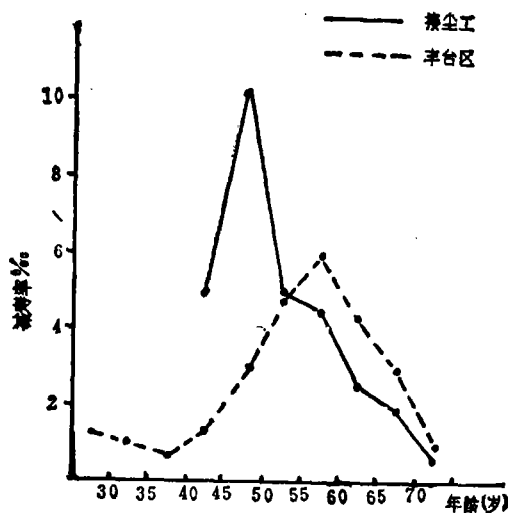


图2 木材厂接尘工与丰台区居民恶性肿瘤标准化减寿率

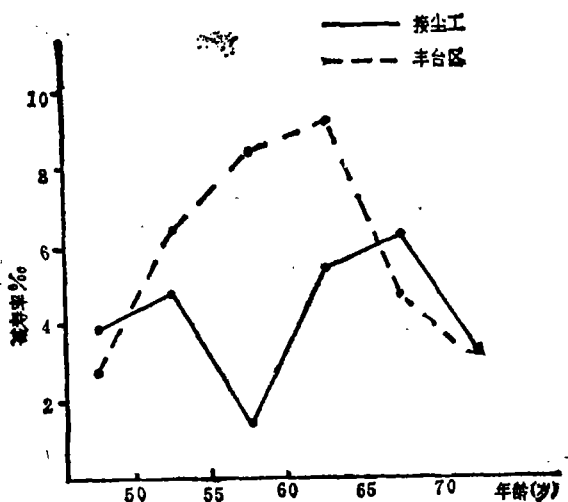


图3 接尘工与丰台区居民脑血管病标准化减寿率

人们首先认识了木尘对呼吸道的刺激作用，其后又确认了硬木与鼻窦癌的关系。但能否引起其他部位的肿瘤，至今尚无定论。尽管英、美等国曾报道有一些木材加工业工人中胃癌、肺癌高发的报道，但要确定其因果联系，尚缺乏充分证据。

本研究以1986年丰台区居民死亡人群为对照，分析研究了北京市木材厂1972~1987年的死亡资料，发现木材厂男工全死因减寿年为4722年，其中脑血管病为1065年，恶性肿瘤1622年，其他死因2035年。木材厂接尘男工恶性肿瘤减寿率高于丰台居民，减寿高峰在45岁年龄组，比当地居民提前10年死亡。而接尘工脑血管病的减寿率较低，减寿高峰在65岁年龄组，比当地居民延迟5年死亡。说明恶性肿瘤是导致工人早死的主要原因。

分析了恶性肿瘤和脑血管病的标准化减寿比(SLLR)和标准化减寿率(SRR)，发现非接尘组中，脑血管病的SLLR和SRR高于丰台居民。而接尘组中，恶性肿瘤的SLLR和SRR均显著高于当地居民。说明接尘工人受恶性肿瘤危害较严重。

按工种分析，发现低浓度接尘组和非接尘组的SLLR和SRR升高不明显。而接触木尘浓度高的木工和机木工恶性肿瘤标准化减寿比、标准化减寿率比均明显高于丰台区居民。这些说明，接触木尘的工人减寿强度大。本研究认为，长期高浓度接触木尘，对工人身体健康有不同程度的危害，尤其是恶性肿瘤。其病因应进一步深入探讨。因此，尽快制定我国的木尘卫生标准，改善木材加工工人的生产环境，降低车间内粉尘浓度，对保护木材加工工人的身体健康是十分必要的。

4 参考文献

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Abstracts of Original Articles

Reconstruction and Improvement of Output of the Ordinary Home-made 200 mA 100kV X-Ray Unit for Chest Radiograph in Pneumoconiosis

Ding Maobo, et al

Radiograph is the first modality for pneumoconiosis surveillance, but an ordinary X-ray unit with capacity of 200 mA 100kV can not fulfill this task. It is roughly estimated that more than 0.6 million unqualified chest radiographs produced each year with those units. Reconstruction of those units make them more effective to achieve high kilovoltage technique and consequently improve the quality of chest films. 1707 films were taken by 2 new units, the study showed that the excellent film rate were 42.7% and 52.2% respectively and film unreadable were less than 3%.

Key words: pneumoconiosis, chest radiograph, quality assurance

Clinical Study of Occupational Acute Toxic Hepatopathy

II Discussion on the diagnosis and treatment of occupational acute toxic hepatopathy

Ren Yinjin, et al

According to the data of 211 cases of occupational acute toxic hepatopathy (OATH), the diagnosis, principles of treatment and the causes of misdiagnosis were discussed. The diagnosis of the disease must be made through a comprehensive analysis of the case in hand. Among the liver function tests studied, the ALT was the most sensitive one, and AST/ALT ratio could not be regarded as a reliable index in differentiating viral hepatitis and OATH.

Key words: occupational acute toxic hepatopathy, diagnostic indications, principles of treatment

Study on the Role of IgE, IgG, and IL-4 in the Occupational Asthma Reduced by *Rhizopus Nigricans*

Lin Xiaoping, et al

The serum levels of specific antibody, immunoglobulin and three kinds of lymphokines were examined in 32 patients with *Rhizopus Nigricans* asthma (group I), 30 patients with intrinsic asthma (group II), and 25 healthy persons (group III). The findings showed that the levels of T_{IgE} , S_{IgE} (A value), T_{IgG4} , S_{IgG4} (A value) and IL-4 in group I were significantly higher than that in both group II and III ($P < 0.01$). The levels of IgM, IFN- γ in the former, however, were significantly lower than in the latter ($P < 0.01$). In patients with *Rhizopus nigricans* asthma, furthermore, there was positive correlation between T_{IgE} and T_{IgG} ($r = 0.783$, $P < 0.01$), T_{IgE} and IL-4 ($r = 0.769$, $P < 0.01$), respectively, whereas negative correlation between T_{IgE} and IFN- γ ($r = -0.761$, $P < 0.01$). However, no remarkable difference in the levels of IL-2 were found among the three groups ($P > 0.05$). It was suggested that the synthesis and regulation of IgE, IgG₄ were directly affected with the secretion of IL-4, IFN- γ , and *Rhizopus nigricans* asthma might be type I allergic disease mediated by IgE, IgG and regulated by IL-4, IFN- γ .

Key words: *Rhizopus nigricans*, interleukin-4 (IL-4), IgE, IgG₄, occupational asthma

The Effect of Exposure to Wood Dust on Life Span of Workers

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Reconstruction and improvement of output of the ordinary home-made 200mA 100kV X-ray unit for chest radiograph in pneumoconiosis Ding Maobo, et al	(193)
Clinical study of occupational acute toxic hepato pathy I Discussion on the diagnosis and treatment of occupational acute toxic hepatopathy Ren Yinjin, et al	(198)
Study on the role of IgE, IgG, and IL-4 in the occupational asthma reduced by rhizopus nigricans Lin xiaoping, et al.....	(202)
The effect of exposure to wood dust on life span of workers Li Quangui, et al	(205)
Investigation on renal functions of workers exposed to carbon Disulfide Xu Chengwei, et al	(208)

Li Quangui, et al

The death data of male workers in Beijing Timber Factory during 1972 to 1987 statistically were analysed. It was found that the peak of potential years of life loss (PYLL) was in the age of 45, ten years earlier than local residents. Standard life loss rate (SLLR) and standard potential years of life loss rate (SPYLLR) of malignance for high level exposed group were significantly higher than local residents, but not for low level exposed group and unexposed group.

Key words: wood dust, malignance, standard potential years of life loss rate (SPYLLR), standard life loss rate (SLLR)

Investigation on Renal Functions of Workers Exposed to Carbon Disulfide

Xu Chengwei, et al

193 workers exposed to CS₂ workers and 50 nonexposed healthy persons as controls

were investigated. Results showed that the levels of Urinaria β_2 -microglobulin(β_2 -MG), albumin(Alb), alkaline phosphatase (AKP), lactate dehydrogenase (LDH) and γ -glutamy transpeptidase (γ -GT) in the exposed group were significantly higher than that of the control and increased progressively with increasing working years and concentration of CS₂. If higher than the 95th percentile of values found in the control group used as criteria of significance, the abnormal prevalence of urinary β_2 -MG, AKP, LDH in exposed group were significantly increased. It is suggested that CS₂ may cause a mixed proximal tubular and glomerular damage. Changes of urinary β_2 -MG level and AKP, LDH activity may be a valuable index for early detection of chronic renal damage in CS₂ workers.

Key words: carbon disulfide (CS₂), β_2 -microglobulin(β_2 -MG), urinary enzyme, renal lesion