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SOME EYE DISORDERS AMONG ARC- WELDERS WORKING IN GENERAL ESTABLISHMENT FOR PETROLIUM REFINERY OF THE NORTH AREA IN BAJI- IRAQ.

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بعض اضطرابات العين عند اللحامين بالقوس الكهربائي في المنشأة العامة لتصفية النفط في المنطقة الشمالية في بيجي- العراق.

الخلاصة:

اجريت دراسة وبائية سريرية على ١٠٨ من اللحامين بالقوس الكهربائي في المنشأة خلال فترة ثلاثة اشهر (اذار-ايار من عام ١٩٩٤). اظهرت نتائج الدراسة ان ١ر٦١٪ من العاملين قد اصيبوا بجسم غريب في العين و ٧ر٥٢٪ اصيبوا باعراض القوس الكهربائي العينية. ان مساعدين اللحامين هم عرضة للاصابة بالجسم الغريب في العين اكثر من اللحامين (٧٥٪، ٢ر٥٧٪ على التوالي) وان اعراض القوس الكهربائي العينية متساو بينهما تقريباً (١ر٥٠٪ ، ١ر٥٣٪). لوحظ ارتفاع نسبة الاصابة لضفرة العين (٧ر٤١٪) وباحتقان ملتحمة العين (١ر١١٪) ومع هذا فقد لوحظ ان نسبة امراض العين في اعلى عند اللحامين مقارنة مع مساعديهم. اعطيت بعض التوصيات.

SUMMARY:

A clinico- epidemiological study was conducted on 108 arc- welders working in the Establishment during the period march to may 1994. The prevalence rate(PR) of arc- eye (AE) was 52.7% while it was 61.1% for foreign bodies in the eye (FB). The assistants of welders are more prone to have FB than welders (75% and 57%, respectively), while the prevalence of AE symptoms is nearly equal in both (50.1% and 53.1%,respectively). A high incidence of pyrigia and conjunctival injection was seen (41.7% and 11.1%, respectively), but eye disorder in general was higher among welders than in their asisstants. Recommendations are given.

INTRODUCTION:

Arc- welding is essential in the manufacture and designing of industrial products, and in pipe line connections. During the process of welding there will be different types of hazards which have many bad effects on health status of welders(1,7).

One of these effects is on the eye. Ultra-violet (UV) rays are extremely irritating to the conjunctive and cornea(2), and even short exposure to the welding arc may result in a painful kerato conjunctivities known

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among the welders as arc- eye(2). The UV emission from welding arc are highly variable and may be attenuated by smoke, fumes and gasses produced by welding operations(6). The main source of injury to the welders eye is entrance of a foreign body (FB), often metal, into the unprotected eye. Other eye conditions possibly by UV include pingueculae and ptrygia which some times attributed to exposure to sunlight, dust, and othr irritants(6). However, Edward A Emmet(6) showed that there were no significant difference among the welders in the prevalence of alteration in visual acuity or clinical abnormalities on slit lamp biomicroscopy and fundoscopy. This study was conducted to determine the prevalence of eye disorders among arc- welders in the Extablishment as no previous study was done on this Establishment.

MATERIALS AND METHODS:

The study involved all arc- welders in the Establishment between the age of 20 to 40 years, to avoid normal physiological changes which could happen in the eye.

The study was designed to determine PR of FB, AE and some eye diseases.(angular conjunctivitis, pterygium, conjunctival injection,corneal opacity). All the employees who did participate in the study were interviewed at the health centre of the Establishment during the period June 1994 to July 1994; the workers answer the questionnaire first and then the clinical examination is performed which includes: a- examination of visual acuity(9); b- direct inspection of the eye.

All cases of AE and FB in the eye which occur to study group during the period march- June 1994 was reported to the first author as he is a full- time occupational physician in the General Establishment for Petrolium Refinery of North Area in Baji- Iraq.

RESULTS:

Table- 1, shows that the PR of FB and AE among welders in general was 61.1% and 52.7%, respectively; the table also shows these rates in accordance to age , years of work, education, type of job, and the use of safety equipments. Table- 2, shows the PR of some eye disease among welders and their assistants. However, the clinical examination of all workers (108 workers) for distant vision (d.v.) shows that 21 (19.4%) workers had minor defect in d.v., 6(5.6%) had bilateral severe defect in d.v., and 12(11.1%) had unilateral moderate defect in d.v.

DISCUSSION:

A clinico- epidemiological study was conducted on arc - welders. The results (Table-1) showed that 61.1% of total workers were subjected to FB during the last three months.

There was a higher prevalence (88.9%), among older age group (30-40 years); this is probably because of careless use of safety equipment. The highest prevalence (64.1%) was reported in newly employed workers (less than five years of work) and this is probably due to poor experience. No patterns of PR of FB was found in accordance of level of education. Assistants

Table- 1: Prevalence rate (PR) of arc- eye (AE) and foreign body (FB) n accordance of different variables.

Variables	Pop. at risk	PR. % of AE	PR. % of FB
Age group			
20-29	24	62.5	33.3
30-40	84	50.0	88.9
Total	108	52.7	61.1
Years of Work			
-5	42	64.2	64.2
6 - 9	21	28.5	57.1
10 - 14	18	66.6	83.3
15 +	27	44.4	44.3
Type of Job			
Welders	84	53.1	57.2
Assistance	24	50.1	75.0

Variables	Pop. at risk	PR % of AE	PR % of FB
Eduacation			
illiterate	3	100.0	100.0
can read only	12	75.0	50.0
Primary school	36	33.0	50.0
Secondary school	12	15.0	15.0
Institute	45	53.3	66.7
Use of safety device			
Allways	75	44.0	64.0
Some times	27	77.7	55.6
not at all	6	50.0	50.0

use the safety equipment are at a higher risk of eye injury with FB. However, 59.1% of welders were always using safety equipments, 13.9% were sometimes using them.

Table- 1, aso shows that 52.7% of all workers had an AE during the last three months. A high incidence (62.5%) was seen in the young age group (20-29 yers), this is probably due to lack of experience. No pattern of PR of AE was seen in relation to level of education.

The assistants are less exposed to AE (50.1%) than the welders (53.1%), but the difference was not significant (P>0.5). Also those who were using safety equipment had lower incidence of AE (44.1%) than others.

Out of 108 workers studied, 66 showed different eye diseases (table-2). Welders showed higher PR (55.6%) in comparison to their assistants (5.6%); these results are higher than the incidence in the general population(6). The high prevalence of pterygiur1 may be due to the effect of infra- red rays or sunlight(10). 63.9% of all workers studied had a normal distent vision which is similar to that in the general population(11,12). The study recommends that welders and their assistants should be educated on health and safety at work, and to always wear

are more exposed to injury by FB (75%) than welders (57.2%), also those who do not

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Table- 2: Prevalence rate (PR) of some eye diseases among workers in accordance. to type of Job.

Some eye diseases	Type of Job			
	Welder		Assistant	
	No.	PR	No.	PR
Arcus Senilis	3	2.8	-	-
Angular conjunctivitis	6	5.6	-	-
Conjunctival injection	12	11.1	-	-
Ptyrigium	39	36.1	6	5.6
No disease	24	22.2	18	16.7
Total	84	77.8	24	22.2

protective devices, also pre- and periodic medical examination should be applied on all workers.

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