



PROFILE OF PATIENTS IN HOCH TRAGEDY AND ASSESSMENT OF FACTORS AFFECTING FINAL VISUAL OUTCOME

Ophthalmology

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ABSTRACT

Acute methanol poisoning is a global crisis. It can be very dangerous by causing severe visual dysfunction, metabolic disturbances, permanent neurological dysfunction and even death. In a recent hooch tragedy in suburban area in Punjab, 24 (47 eyes) male patients in age group of 25-65 years presented to us after spurious alcohol intake. The time of presentation after alcohol intake varied between 1-15 days as they were referred after medical treatment for systemic ailments at other centers. The amount of alcohol intake in all these patients ranged between 125ml-500ml. At presentation, 19 (40.4%) eyes were PL-VE while 16 (34%) were PL+VE or HMCF, 5 (10.6%) had vision between 6/60-FCCF and 7(14.9%) between 6/6 -6/36. 11(23.4%) eyes showed improvement in visual acuity at 6 weeks of treatment and 6 (12.7%) eyes deteriorated even after the treatment. The final visual outcome was correlated with age, day of presentation, amount of alcohol and initial visual acuity. In this study, we describe profile of patients who presented with a history of spurious alcohol consumption and assessment of risk factors affecting their final visual outcome.

KEYWORDS

INTRODUCTION:

Methanol intoxication is a common problem in many parts of the world. In late July and early August 2020, at least 121 people died after drinking toxic, illegally-made alcohol in Punjab, India. Many such outbreaks of hooch tragedy have been reported not only from India but also from other parts of the world such as Kenya and Libya in 2013 and 2014, respectively.[1,2,3,4,5] On consumption, methanol changes into formic acid inside the body which is more toxic than methanol itself by inhibiting mitochondrial ATP production. Methanol intoxication (even in small amounts) can be very dangerous by causing severe visual dysfunction (including irreversible bilateral blindness), metabolic disturbances, permanent neurological dysfunction and even death.[6] Methanol intoxication is followed by a 12-24 hour latency period, after which appear its symptoms and signs which are related to the gastrointestinal, to the ocular, and to the nervous system.[7] Early ocular findings include photophobia, blurred vision, painful eye movements, disturbances of pupil reactions and colour vision, decreased visual acuity, visual field defects and optic disc oedema with tortuous retinal vessels.[8] Histopathologically, circumscribed myelin damage behind the lamina cribrosa of the optic nerve has been reported.[9] These outbreaks highlight multiple health challenges such as variation in presentation profile, management difficulties, increased burden on health-care system, high mortality and morbidity rates. In this study, we describe profile of patients who presented with a history of spurious alcohol consumption in a recent hooch tragedy in suburban area in Punjab and assessment of risk factors affecting their final visual outcome.

MATERIALS & METHODS

24 patients with history of sudden onset of blurring of vision after consuming spurious alcohol were referred to eye emergency. They presented to us after a time interval of 1 to 15 days of onset of symptoms after they were stabilized and treated for their systemic manifestations.

After taking written informed consent in vernacular language, detailed history of the patient was taken and demographic profile was recorded. Complete ophthalmological examination including best corrected visual acuity on snellen's chart, color vision on ischiara chart, slit lamp biomicroscopy and fundus examination with + 90 D lens was done. Fundus photograph of each patient was taken. Each patient irrespective of day of presentation was administered intravenous methylprednisolone 1 gram in 500 ml ringer lactate slowly over 2 hours for 3 days followed by oral prednisolone 1 gm/kg body weight for 11 days and oral steroids tapered over 4-6 weeks. Along with this

regimen the patients also received tab folic acid 50 mg/day . Other supportive treatment in form of inj thiamine 100 mg and intramuscular cyanocobalamin 1000µg was given for 5 days. Patients were asked to follow-up every week for 6 weeks.

Statistical analysis was done by Fisher's Exact Test to correlate various factors affecting final visual outcome.

Visual acuity outcome was regarded as improvement (two lines gain in VA), stabilization (within two lines of initial VA) or deterioration (loss of two lines).

RESULTS

Table 1: Demographic Profile of patients

		No. of eyes	%
Age (years)	<=30	8	17.0
	31-40	14	29.8
	41-50	8	17.0
	51-60	14	29.8
	>60	3	6.4
Day of Presentation	<=4 days	24	51.1
	>4 days	23	48.9
Alcohol intake	<=250	28	59.6
	>250	19	40.4

The study included 47 eyes of 24 male patients. 22 patients presented with bilateral diminution of vision, one patient as unilateral diminution of vision and one patient was one eyed. The age group of these patients varied between 25-65 years. Majority of them were either between 31-40 yrs (29.8%) or 51-60 yrs (29.8%). The time of presentation after alcohol intake varied between 1-15 days as they were referred after medical treatment for systemic ailments at other centers. The amount of alcohol intake in all these patients ranged between 125ml-500ml.

Table 2: Status of visual acuity at presentation and after treatment

	Visual acuity at presentation No. of eyes (%)	Visual acuity after 6 week treatment No. of eyes (%)
6/6- 6/36	7 (14.9)	9(19.1)
6/60-FCCF	5(10.6)	12(25.5)
HMCF- PL+VE	16(34.0)	5(10.6)
PL-VE	19(40.4)	21(44.7)
Total	47(100.0)	47(100.0)

At presentation, 19 (40.4%) eyes were PL-VE while 16 (34%) were PL+VE or HMCF, 5 (10.6%) had vision between 6/60-FCCF and 7(14.9%) between (6/6 -6/36).Pupil was normal in size and reacting to light in 3 patients but sluggishly reacting in 7 patients. It was semi-dilated and fixed in 13 patients. Marcus Gunn pupil could be demonstrated in only 1 patient. On ophthalmoscopic examination, optic disc was normal in 3 patients, hyperemic with blurred margins in 5 patients, haemorrhage over disc in 2 patients and disc pallor in 14 cases. (Figure 1&2)

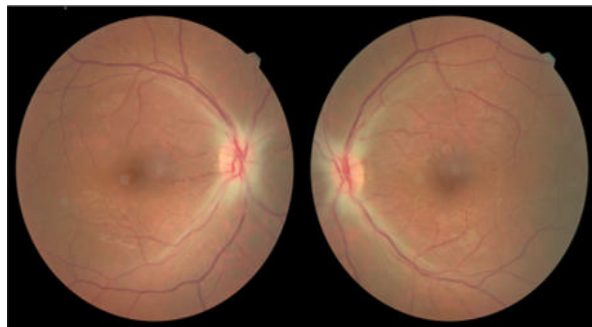


Figure1: Fundus photograph showing B/L hyperemic disc in a patient after spurious alcohol intake

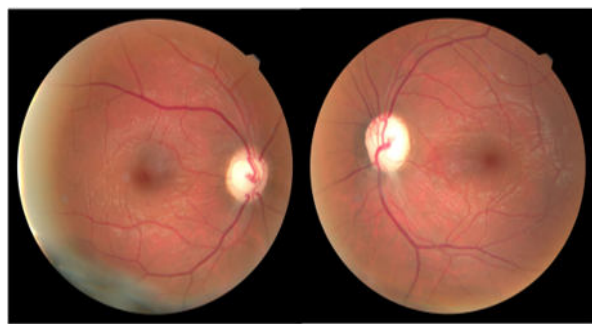


Figure2: Fundus photograph showing B/L pseudoglaucomatous optic atrophy in a patient after spurious alcohol intake

Table 3: Correlation of age, day of presentation and amount of alcohol with visual outcome

		Visual Acuity after treatment								Total	P value
		6/6-6/36		6/60-FCCF		HMCF-PL+VE		PL-VE			
		N	%	N	%	N	%	N	%		
Age (years)	<=30	4	50.0	1	12.5	1	12.5	2	25.0	8	0.004
	31-40	4	28.6	4	28.6	0	0	6	42.9	14	
	41-50	1	12.5	2	25.0	3	37.5	2	25.0	8	
	51-60	0	0	2	14.3	1	7.1	11	78.6	14	
	>60	0	0	3	100	0	0	0	0	3	
Day of Presentation	<=4 days	8	33.3	5	20.8	2	8.3	9	37.5	24	0.183
	>4 days	1	4.3	7	30.4	3	13.0	12	52.2	23	
Alcohol intake	<=250	9	32.1	7	25.0	4	14.3	8	28.6	28	0.006
	>250	0	0	5	26.3	1	5.3	13	68.4	19	

In patients less than 30 years of age, 2 (25%) out of 8 eyes were PL-ve whereas 11(78.6%) out of 14 eyes were PL-ve in age group of 51-60 years. The correlation of age with visual outcome was statistically significant (p value is .004).

Vision in 8 (33.3%) eyes out of 24 eyes who presented to hospital in less than 4 days of intake of alcohol was 6/6 to 6/36 while only 1 (4.3%) eye out of 23 eyes who presented to hospital after 4 days had vision 6/6. Though 12 (52.2%) eyes out of 23 eyes were PL-ve in patients who presented after 4 days but the correlation of day of presentation with visual outcome was found to be statistically non significant (p value is .183).

9 (32.1%) eyes of patients with intake of alcohol $\leq$ 250 ml had vision equal to or better than 6/36 while none patient with alcohol intake $\geq$ 250 ml had vision 6/36 or better. Moreover 13 (68.4%) eyes out of 19 eyes were PL-ve with $\geq$ 250 ml of alcohol. The correlation of amount of alcohol with visual outcome was statistically significant (p value is .006).

Table 4: Correlation of VA at presentation with visual outcome

VA at presentation	VA after 6 wks treatment				Total
	6/6-6/36	6/60-FCCF	HMCF-PL+VE	PL-VE	
6/6-6/36	7	0	0	0	7
6/60-FCCF	0	3	1	1	5
HMCF-PL+VE	2	6	4	4	16
PL-VE	0	3	0	16	19
Total	9	12	5	21	47

11(23.4%) eyes showed improvement in visual acuity at 6 weeks of treatment. One patient had marked improvement in visual acuity from PL+ve both eyes to 6/12 in right eye and 6/9 in left eye as patient presented early and pupil was sluggishly reacting to light and disc was hyperemic at presentation. 6 (12.7%) eyes deteriorated even after the treatment and these patients have pseudoglaucomatous optic atrophy at 6 weeks.

DISCUSSION:

Acute methanol poisoning is a global crisis. Many such outbreaks have been reported in the past not only from India but also from all over the world. These outbreaks mainly affect poor and vulnerable strata of the society. In a recent hooch tragedy in suburban area in Punjab, 24 male patients in age group of 25-65 years presented to us after spurious alcohol intake. A study by Galvez-Ruiz A et al shows that methanol intoxication causes visual loss due to optic nerve damage which is generally worse with advancing age.[10] Our study also shows definite correlation of age with final visual outcome. Younger age patients have better prognosis than older patients.

In a reported study the authors have suggested that intravenous steroids are beneficial in the treatment of methanol induced blindness but the interval between ingestion and start of therapy was found to be a critical factor.[11] Our observations differ as visual outcome does not depend upon day of presentation to the hospital. Shukla M et al reported beneficial use of intravenous steroids in treatment of methanol induced blindness irrespective of time of presentation and degree of visual disability.[12] Our study also shows that final visual outcome does not depend upon day of presentation for treatment.

The minimal reported lethal dose of methanol is 15 ml of 40% methanol. The highest recorded dose of methanol poisoning is 500-600 ml. [13] Ziegler reported permanent total blindness as the result of consumption of a teaspoonful of it as wide individual variation exists.[14]

In a study by Patel JK et al, the author have found no relationship between the amount of alcohol consumed and the eye involvement. [15] In another study by Naraqi S. et al, they found that the estimated amount of consumed methanol did not seem to influence the outcome of poisoning.[13] However our study showed a definite correlation between the amount of alcohol consumed and visual outcome. Patel S studied visual outcome in methanol poisoning and they found that the amount of alcohol consumed had unfavourable impact on visual impairment as well as prognosis.[16] The results are similar to present study.

A study by Unnikrishnan S and Raju KV showed that final visual acuity was poor in patients presented with initial poor vision.[17] Our study also showed direct correlation of visual acuity at presentation with final visual outcome as patients with visual acuity between 6/6-6/36 have better prognosis than patients having visual acuity less than 6/60 though few patients showed improvement at 6 weeks after treatment.

Thus our study showed visual outcome depend upon age of patient, amount of alcohol consumed, initial visual acuity but it does not depend on day of presentation to hospital. We therefore recommend all patients to be treated irrespective of the day of presentation following methyl alcohol poisoning.

CONCLUSION:

Low vision and temporary blindness emerged as common symptom among those who had consumed the spurious liquor but survived. Visual prognosis in methyl alcohol poisoning is directly correlated to amount of alcohol consumed. Early presentation and treatment did not significantly alter the visual outcome. Therefore all patients should be treated irrespective of the time of presentation following methyl alcohol poisoning.

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