

**A STATISTICAL STUDY OF INSECTICIDAL POISONING IN NASIK
REGION A COMPARATIVE STUDY.**

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ABSTRACT

Viscera samples forwarded to forensic science laboratory are analyzed in toxicology division. In many cases the relatives and other source during inquest indicate that affected had consumed insecticide or poison, but many times the chemical analysis does not reveal any chemical poison. To find out the exact cause of such discrepancy, this nine year comparative study has been carried out. Organophosphorus, Organochloro and Carbamate insecticides are extensively used in India and most often for suicide purpose. The present study was undertaken to know the incidence of insecticidal poisoning and chemical examination of ante mortem and post mortem samples. This study is the sincere effort to throw light on importance of gastric aspirate in

poisoning cases where deceased received treatment before death

KEYWORDS: Poison, Forensic, Statistical study and biological sample.

INTRODUCTION

Nasik region includes five district, Nasik having population 49,87,923, Dhule having population 17,07,947, Nandurbar having population 13,09,135, Jalgaon having population 42,24,442 and Ahemadnagar having population 45,43,080.as per 2011 census.

Worldwide Poisons are easily available in market to control pest but in India poisons are often used for suicidal and homicidal purposes. People under influence of mental frustration try to find out easy and cheapest way for the purpose of suicide, for example the person related with agriculture usually uses insecticide to commit suicide on the other hand person related with medicine (pharmacists, nurses, doctors) uses drugs to commit suicide, In fatal cases investigating officer forward the dead body to government medical officer to find the cause of death. The main objective of medical examinations is as follows.^[1]

- 1) Explanation of cause, manner circumstances of death
- 2) Accurate death certification
- 3) Lawful disposal of body
- 4) Maintenance of neutrality
- 5) Unexpected and unexplained death
- 6) Death due to violence, accident and suicide
- 7) Pregnancy death
- 8) Improper or negligent treatment
- 9) Death due to poisoning
- 10) Death during or within 10 Days of an operative procedure
- 11) Death due to anesthesia
- 12) Death during police custody
- 13) Death of a mentally ill patient
- 14) Death of child in custody under the child welfare act or under the guardianship of wards act
- 15) Death in relation to occupation

Viscera collected by Medical officer along with postmortem notes forwarded to Forensic science laboratory. After receiving viscera samples, Chemical analyzer study the postmortem notes, as well as the history provided by the investigating officers. As per protocol biological samples are analyzed and reported. With the help of chemical analyzers report, Medical officer gives final opinion about cause of death.

Earlier study was undertaken to know the incidence of organophosphorus poisoning, socioeconomic status, and nature of poisons in Gulbarga region of Karnataka state^[2]

We have made an attempt to find out exact cause of negative reported cases from 2005 to 2013 in Nasik region^[3]

MATERIAL AND METHOD

During this period 15957 cases were examined out of which 10973 cases were having history of poisoning and remaining 4984 of cases were without poisoning history

Data was collected from following sources.

1. Annual report of toxicology division from Regional forensic Science laboratory, Nasik.
2. Postmortem notes received along with Viscera.
3. Police authority letters received along with viscera.
4. Monthly Data Register of case result.

Observation

Table 1. Comparative study of cases examined having definite history of poisoning.

No. of Cases/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Examined	636	1631	1940	1956	1966	2094	1428	1335	2971	15957
Having history of poisoning	486	1201	1320	1389	1357	1423	971	846	1980	10973
Deceased received treatment less than 12 h	107	277	381	416	439	441	299	266	575	3201
Poison detected in cases where deceased received treatment less than 12 h	80	199	281	312	338	322	240	186	408	2366
Deceased received treatment more than 12 h	71	177	264	280	283	288	200	228	447	2238
Poison detected in cases where deceased received treatment more than 12 h	23	67	105	103	102	112	78	91	165	846
No definite treatment mentioned on PM notes/Police history	308	747	675	693	635	694	472	352	958	5534
Poison detected in cases having no definite treatment history	205	481	289	278	195	260	181	175	449	2513
Total poison was detected	308	747	675	693	635	694	499	452	1022	5725
Poison was not detected	178	454	645	696	722	729	472	394	958	5248

Total 15957 cases were examined out of which 10973 cases have positive history of poisoning, 3201 cases have got treatment less than 12 hr, 2238 cases have treatment more than 12 hr. 5534 cases have no definite history of medical treatment.

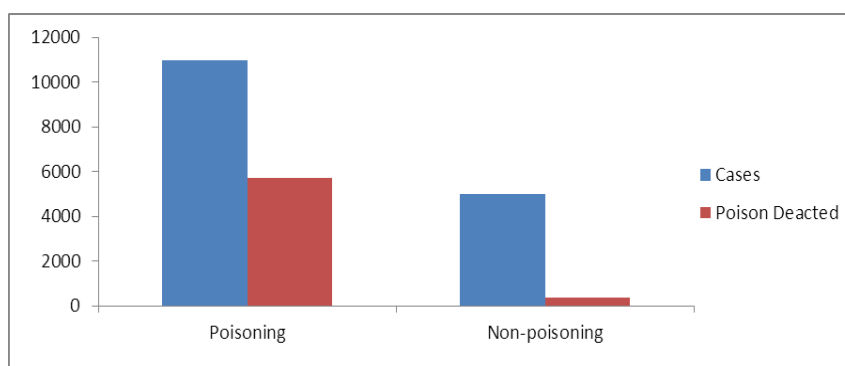
Table 2 Comparative study of cases examined with no specific history of poisoning

No. of Cases/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Examined	636	1631	1940	1956	1966	2094	1428	1335	2971	15957
No history of poisoning	150	430	620	567	609	671	457	489	991	4984
Poison was detected	17	50	56	74	36	43	44	45	71	436
poison was not detected	133	380	564	493	573	628	413	444	920	4548

Total 15957 cases were examined out of which 4984 cases have without history of poisoning out of which poison was detected in 436 cases and 4548 cases were negative.

Table 3 History v/s Cases and poison detected (2005 to 2013)

History	Cases	Poison Detected	Positive %	Negative %
Poisoning	10973	5725	52.2	47.8
Non Poisoning	4984	436	9	91

**Figure1. History v/s Cases and poison detected (2005 to 2013)**

In no history cases poison was detected only in 9 % cases. Poison was detected mostly in hanging cases and unknown dead body cases. In few snake bite cases poison was detected because alleged history may be misled by family member.

Table 4 No of cases of stomach wash/ gastrict aspirate

No. of Cases/Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Examined	636	1631	1940	1956	1966	2094	1428	1335	2971	15957
Stomach wash/ Gastrict Aspirate received	25	36	46	50	38	48	62	54	61	420
Poison Detected in Stomach wash/ Gastrict Aspirate cases	22	31	39	44	34	41	53	48	53	365
Percentage positive cases	88	86	85	88	89	85	85	89	87	87 (average %)

Total 15957 cases were received, 420 Gastric aspirate were submitted to laboratory for examination. The percentage positive result in gastric aspirate was achieved up to 87 %.

Table 5. Comparative study of poison detected

Name of poison	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Endosulfan	83	294	267	276	251	277	210	148	77	1883
Rogor	53	122	99	129	78	79	87	69	224	940
Monocrotophos	14	54	56	46	62	126	77	71	285	791
Nuvan	51	53	55	54	44	38	23	36	114	468
Immidacloprid	2	8	20	19	23	18	12	14	68	184
Malathion	8	8	9	3	0	0	1	2	0	31
Chlorpyrifos	6	0	8	7	22	26	10	16	36	131
Thimet	3	10	23	15	23	14	21	13	28	150
Profenofos	2	14	6	6	6	7	9	6	25	81
Cypermethrin	8	24	26	60	29	11	7	16	43	224
Baygon	6	9	4	5	14	0	0	0	1	39
Other	89	201	158	147	119	141	86	106	192	1239
Total	325	797	731	767	671	737	543	497	1093	6161

Other poisons includes Methyl Parathion, Quinalphos, Triazophos, Oxyflurfen, Carbofuran, Amitraz, Alphamethrin, Deltamethrin, Carbosulfan, Cartep, Metasystox, Phenvalarate, Ethyl alcohol benzodiazepine derivatives and B.H.C, however the use of Endosulfan found to be decreased from the year 2011.

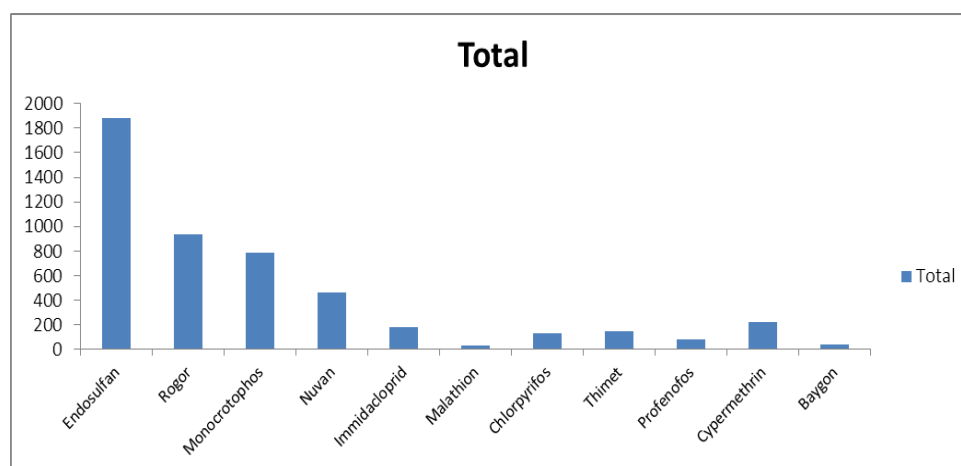


Figure 2 Comparative study of poison detected

Endosulfan is frequently used for suicidal and homicidal purpose followed by Rogar, Endosulfan was detected in 30.63% cases.

CONCLUSIONS

In cases such as suicidal and homicidal poisoning, including cases having history of dowry death, deceased may or may not received any medical treatment, but after consumption of chemical poison the first reaction of human body is nausea followed by vomiting and during medical treatment usually Medical Officer/Doctor try to remove maximum amount of unabsorbed poison from stomach. As Vomit sample from crime scene, stains on victims/accused cloths and Gastric aspirate/Stomach wash having probative evidential value are often ignored during the process. Treatment more than 12/24 hours also plays important role in poison detection. Often in many such cases due to ignorance of important sample and treatment more than 24 hours creates confusion for final opinion because before death victim admits the consumption of poison (Homicidal/Suicidal) as per police authority records and in such cases during trial in Court of law Medical Officer as well as Chemical analyzer has to answer the question for negative result. From the above comparative study it can be concluded that short history given by investigating officer as well as postmortem details given by medical officer plays vital role during chemical analysis of biological material. In non fatal cases where patient is under treatment, the first gastric aspirates as well as blood sample, urine sample are most important sample from medico-legal point of view. Vomit sample, soil contaminated with vomit, scrub or wipe up of vomit sample by clean cloth/cotton piece, stained dress material, are non-biological sample which must be collected by investigating authority. Non biological sample helps in chemical analysis and are important for further investigation and helpful to fix the scene of crime.

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REFERENCE

1. Modi's Medical Jurisprudence and Toxicology.
2. Organophosphorus compound poisoning in Gulbarga region - A five year study. DG Gannur, Prakash Maka, KS Narayan Reddy Vol. 2, No. 1 (2008-01 - 2008-06).
3. Annual reports of Nine years of toxicology division in Nasik region.