

**DR. EDWARD LAWRIE'S REMARKS ON THE FINDINGS
OF HYDERABAD CHLOROFORM COMMISSIONS
IN HIS ANNUAL REPORT OF 1303 Fasli.**

N.R.GIRIDHAR*

ABSTRACT

This article is a re-presentation of the important remarks of Dr. Edward Lawrie with regard to the Chloroform Commissions as found in the administrative report of the Nizam's Government for 1893-94. It seems that these remarks might have been presented by Dr. Lawrie to the Nizam's Government in the form of an annual report in 1303 Fasli. Though these findings were later proved to be wrong, but the value of Dr. Lawrie efforts will remain as a landmark in the history of medicine.

Introduction:

Dr. A. Ramachari the noted Medical Historian of Hyderabad and Dr. Momin Ali the present Asstt. Director Incharge of IJHM, OMC, Hyderabad, have penned a beautiful article on History of Hyderabad chloroform commissions and history of Anaesthesia, in the Bulletin of Indian Institute of History of Medicine Vol. XIX pp. 47 to 61, which is of much historical value in the medical history of Hyderabad city under the Asafjahi rule. There in they have given an analytical presentation of how man's endless pursuit for finding nature's hidden treasures and secrets had rewarded him with countless discoveries in every field and the history of anesthesia and history of Hyderabad chloroform commissions being no exceptions. They have also stated

clearly that the Hyderabad chloroform commissions, which were held in 1888 and 1889 were due to the efforts of Dr. Edward Lawrie the Residency Surgeon, who entered into argument and persuaded the Nizam of Hyderabad, Nawab Mir Mahboob Ali Khan, to give all the necessary assistance for a scientific investigation of the safety of chloroform and the lively interest shown by the Nizam in conducting the first Hyderabad chloroform commission in 1888 and the second Hyderabad chloroform commission in 1889, findings of which were sent as reports to England which invariably put Hyderabad on the map of Medical History of the World.

In this connection, I am presenting in verbatim the remarks of Dr. Edward Lawrie about Hyderabad Chloroform

*Junior Research Fellow (Dept. of History, Osmania University, Hyderabad) 81/1, Saraswathinagar, Secunderabad - 500 015. (INDIA).

commissions in this article which spells out the work, findings, reports, and their criticism, which are of much historical value and importance as a sequel to the already published article of History of anaesthesia and history of Hyderabad chloroform commission in the already quoted bulletin.

It seems that, these remarks have been presented by Dr. Edward Lawrie to the Nizam's Government in the form of an annual report to highlight the follow up work and reports of the chloroform commissions due to a lapse of 5 years, after the commission investigations were over without much response from Britain with regard to it. The Nizam seems to have enquired and elicited the necessary details and facts from Dr. Edward Lawrie, with regard to the matter. This article is re-presentation of the remarks as found in the Administrative Report of the Nizam's Government for (1893-1894 A.D) which itself were presented in it from the annual report of Dr. Lawrie, submitted to the Nizam's Government in 1303 Fasli.

Important Facts:

These are connected with the Hyderabad chloroform commissions as recapitulated by Surgeon Lieutenant-colonel Dr. Edward Lawrie in the annual report of 1303 Fasli as presented to the Nizam's Government and as represented in the Report of the Administration of His Highness, The Nizams Dominions, for 1303 Fasli (8th October 1893 to 7th October

1894) published in the year 1895.

"The year under report is memorable owing to the settlement of the long debate chloroform question. The fact is established that the chloroform has no direct action upon heart. It will not be out of place here to recapitulate briefly the facts connected with the Hyderabad chloroform commission in order that his Highness' Government may be in a position to form a correct estimate of the causes which have led to a delay of five years in the acceptance of the conclusions put forward by the commission".

1. "In 1864 the committee appointed by the Royal Medical and Chirurgical society discovered that chloroform, when inhaled, produces lowering of the blood pressure. At that time it was universally believed that a fall of the blood pressure is synonymous with the weakening of the heart; the report of the committee made it appear therefore that chloroform has a direct weakening action upon heart, and consequently that it is right to take the pulse as a guide to its effects".

2. "In 1878 the committee of the British Medical Association, the Glasgow Committee, repeated the observations of the 1804 committee with more accurate instruments. The Glasgow committee found that chloroform, when given effectively, always lowers blood pressure and that sometimes, when given as they gave it, "either by pumping into the lungs" or "by a cloth saturated with the agent being held over the mouth and nose" (i.e. in either case with insufficient air), it causes

the blood pressure to fall suddenly. Still regarding lowering of the blood pressure as synonymous with weakening of the heart, the Glasgow Committee concluded that chloroform has a direct paralysing action upon the heart, and that the sudden fall of pressure anaesthetic form of sudden cardiac stoppage".

3. "In 1879, Sir Joseph Lister showed that when chloroform is applied directly to the wet of a frogs foot, stasis immediately takes place; and the same effect is undoubtedly produced in the same manner in the lungs, when air saturated with chloroform is pumped into them, or when it is given by a cloth saturated with the agent being held over the mouth and nose".

4. "Chloroform having been employed between 1879 and 1889, with inform safety on syme's principle of watching the respiration alone and ignoring the heart, and with an ever increasing number of deaths on the pulse-watching system, it was felt that there must be same flow in the conclusions set forth in 1864 by the committee of the Royal Medical and Chirurgical society, and in 1878 by the Glasgow committee of the British Medical Association. The Hyderabad commission was therefore appointed to find out where the error be".

5. "The Hyderabad commission found that the fall of blood pressure is not synonymous with weakening of the heart, and is not in itself dangerous whether it takes place gradually or suddenly. On the contrary, under the circumstances, it may beneficial as a safeguard. The commission

proved that the fall of blood pressure under chloroform is never dangerous unless the breathing is interfered with, and that the sudden fall of pressure discovered by the glassgow committee is not due to the direct action of the chloroform upon the heart, but to stimulation of the vagus nerve".

6. "In March, 1890, further experiments were undertaken in Hyderabad with the object of accurately determining, for the standard use, the events which take place in uncomplicated chloroform poisoning. Their experiments confirmed the findings of the Hyderabad chloroform commissions".

The signs of heart failure afforded by the pulse under chloroform indicate pre-existing interference with, or stoppage of the respiration consequently, if the pulse is taken as a guide to the effect of chloroform clinically, it does not, like the breathing, furnish timely warnings of approaching danger to the heart, but merely directs attention when it may be too late, to be dangerous if not a fatal, weakening of the heart after it is actually established".

7. "In May, 1890, a most interesting series of experiments with chloroform were conducted in Edinburgh by Prof. Rutherford. These experiments have not been published, but they confirmed the views of the Hyderabad commission".

8. "In June 1890, Dr. Gaskell undertook to find out by further experiments the exact cause of the fall of the blood pressure produced by the chloroform, He and Dr. Shore therefore performed six cross circulation experiment with chloroform on

dogs and rabbits. They concluded that the fall of blood pressure caused by chloroform is almost entirely due to the weakening of the heart. Their report, though it contained no proof whatsoever that the heart is directly weakened by chloroform, necessitated a repetition of the cross-circulation experiments in Hyderabad".

9. "The Hyderabad cross-circulation experiments, 51 in number, were carried out in September, October and November 1891. It became evident, after a number of trials, that it is so enormously difficult to establish a cross-circulation between two animals as to be almost prohibitive. It further became clear that in Gaskell's and Shore's much vaunted experiments, the cross-circulation was not established. Their conclusion as to the direct weakening action of chloroform on the heart were therefore valueless".

10. "When after endless failures, the cross circulation had been successfully established in the Hyderabad experiments, it was proved (a) that chloroform has no direct action whatsoever on the heart, and (b) that the fall of the blood pressure if occasions is produced by two causes: primarily and directly by dilatation of the arterioles, owing to vaso-motor narcosis which is harmless; and secondarily by narcosis of the respiratory centre which in directly produces weakening, and ultimately stoppage, of the heart and death".

11. "In 1892, Dr. Ceil H. Leaf, con-

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ducted a large number of experiments with chloroform and other in Hyderabad, and about the same time Dr. Hobart A. Hare and Dr. Thoruton, made an additional series of experiments with chloroform in philadellive, in order to confirm or disapprove the experiments of the Hyderabad commission. The reports of Dr. Leaf, and of the distinguished American therapeutists, confirmed the findings of Hyderabad commission, the only reservation they made being that it appeared to them that in cases of serious debility 'or' weakening of the heart, chloroform might, clinically, prove the last straw to turn the scale and cause of death"

12. "In 1894, the Nizam's Government deputed two students* to England with the Residency Surgeon, who proceeded on three months leave, to demonstrate the Hyderabad method of chloroform administration. The residency surgeon stipulated that in order to demonstrate the method in entirety, he should be allowed to conduct the whole operation, 'or' series of operations, in which chloroform was given by his students, in any one 'or' more of the London operating theatres. This condition, at the last moment, was disallowed by the authorities of the hospital concerned".

13. "Through the courtesy and kindness of Mr. Christopher Heath and Mr. Treves, the celebrated surgeons of the university college and London hospitals,

* Dr. Mohammad Abdul Ghani and Dr. (Major) M.G. Naidu the two students of Edward Lawrie were deputed to England. Dr. Md. Abdul Ghani demonstrated the technique of administration of chloroform by Hyderabad chloroform In London on 25th May 1895.

the Hakims deputed by his Highness Government gave chloroform at both the institutions, and were permitted to be present at numerous administrations of either in public and in private by such well known anaesthetists and Messrs. Woodhouse Braine, Dudley Buxton and Dr. F. Hewett"

14. "The opinion of the London surgeons and anaesthetists, who saw the Hyderabad Hakims give chloroform, was that they did not push the anaesthetic as far as the anaesthetists of London. Mr. Treves for example complained that the abdomen was tense when he started operating for appendicitis, and nothing could have illustrated better the difference in the position of the surgeons of Edinburgh and London schools with regard to anaesthetics.

In London they dread heart failure, and the surgeon delegates his responsibility to a specialist who dreads it too. In Edinburgh they do not dread cardiac failure, and the surgeon is responsible for the chloroform as well as for everything else connected with the welfare of his patient during an operation. Chloroform is given by a student, and if the patient is not kept sufficiently "under" it is clearly the surgeon's fault for not training him, properly, 'or' directing him to give more. He acts entirely under the order's of the surgeon., In London it is not uncommon to see the surgeon acting under the orders of the anesthetist. The anaesthetist may give

a little too much chloroform, and cause pallor to ensue from cardiac weakening owing to interference with the breathing. He then says to the surgeon "you must stop your operation, there is good deal of shock", and the surgeon instead of forbidding the anaesthetist to give any more chloroform without his order, and proceeding with the operation to a premature close. The delegation of the responsibility for the anaesthetics to a specialist; tends to reduce the surgeon to the level of a mere operator and is a serious blot on London surgery. On the other hand, perfect anaesthesia is produced in London by other with the help of asphyxia. But a number of surgical patients cannot stand either the irrigating effects of ether, or the suffocation which is an essential feature in this method of anaesthesia; whereas no such proposition can be laid down with regard to the simple anaesthetica; which is all that is produced when chloroform is given in accordance with the Hyderabad rules. The day cannot be far distant when this truth will be recognised, and chloroform will resume the position from which it has been displaced by ether asphyxia. The unscientific and unsurgical ether and asphyxia plan of anaesthesia is only tolerated by the profession, and the public in England, and the Northern states of America, on account of the erroneous dread of direct cardiac failure under chloroform for which the Glassgow committee

is mainly responsible; and it is an extraordinary fact that fear and over anxiety with regard to the condition of the heart, have led to London method of taking the pulse as a guide, so that the very thing it is desired to avoid, Viz. fatal weakening of the heart is in a cognizable number of cases rendered inevitable by the method of administration in vogue in London Hospitals"

15. "In July 1884, we were invited to Cambridge to witness cross-circulation experiments on dogs by Dr. Gaskell and Shore. They were careful to explain that they were doing these experiments to convince us, and not themselves, of the direct weakening effect of chloroform on the heart. In these experiments the coagulation of blood in the tubes was guarded against by defibrinating the blood before hand by drawing it out of the animals bodies, whipping out of fibrin, and restoring it to the blood-vessels again. This in itself is a measure which must necessarily vitiate to a great extent observations on the influence on the heart of any agent which weakens it either directly (or) indirectly. A second point which must be noticed about the Cambridge cross-circulation experiments of 1884 is, that the chloroform was administered to the animals through a tracheal tube direct from a bottle. Gaskell himself had declared that this must weaken the heart by producing engorgement of the right side from Stasis of the circulation in the lungs. Two

experiments were performed. In the first the heart was stopped, and the respiratory movements continued after the animal was dead. Gaskell stated that this was the result they had invariably obtained in their first series of experiments. Unfortunately for this statement, it was afterwards found, on post mortem examination, that blood and chloroform had access through an unsecured vertebral artery to the animals brain, from which it had been supposed to be entirely cut off, and that therefore the experiment was a failure, in that it did not fulfill the conditions laid down by Gaskell and Shore themselves as regards the cross-circulation. In the second experiment the heart was stopped as before, and a most astounding result followed. The fed animal's brain, the animal whose heart was stopped, remained alive, and the feeder kept up the artificial respiration in the fed for a long time after it was dead, but pure blood sent from itself to the fed's respiratory centre. In this case it was found on post mortem examination that the experiment was a failure. Blood and therefore chloroform, had obtained access from its own systemic circulation to the fed's brain, i.e. to its respiratory centre and to the other centres in the Medulla. In neither of the experiments was the brain circulation of the fed completely separated from its systematic circulation, as it ought to have been properly performed. Both the tricky Cambridge cross-circulation experi-

ments of 1894, as well as the corresponding experiments on which the original report of Messrs Gaskell and Shore was founded, and on which they based their theory of the direct weakening effect of chloroform on heart, were failures".

16. "During our visit to England; there were four discussions in the well known medical societies on the subject of chloroform. The first was at the London Hospital Medical Society, and was arranged by Dr. Leaf and presided over by Mr. Dean of the London Hospital. This meeting was an immense success as everything is at the London Hospital. The second discussion took place at the Royal Medical and Chirurgical society, and was marred lay a suggestions on the part of Dr. Gaskell. The third discussion took place at Sheffield, at a very pleasant gathering of the Medical and Chirurgical society of that town. This meeting was arranged by my lamented friend the late Dr. Jackson Cleaver, and is a memorable on account of the brilliant and faltering reception accorded to us, as representatives of His Highness Government, by the distinguished physicians and surgeons of Sheffield; and also on the account of the remarkable statement made by the President. In closing the discussion the President said that he was convinced of the truth of all we had stated about chloroform; but he should still continue to use ether, for the reason that the men, they got from the London schools as assistants

and house surgeons, know nothing at all about anaesthetics, and ether being the less potent agent of the two was safer in their hands than chloroform".

17. "Finally during our stay in England, Dr. Ferrier introduced us to Mr. Victor Horsley, who had discovered that death from bullet wound of the brain is on all hours with death from the uncomplicated action of chloroform, and is produced by simple arrest of the respiration without asphyxia 'or' Cardiac syncope, professor Horsley, whose disinterested kindness can never be forgotten took any amount of trouble to show as the results of his work, and how to perform his experiments, at a time when he was excessively busy, and he also repeated in our presence one of the most famous of these experiments. This experiment showed clearly, that death from, uncomplicated poisoning by chloroform is previously the same as death from simple bullet-wound of the brain, and it finally settles the chloroform controversy. No one attempted to disprove this statement, for the very excellent reason that it is not possible to do so".

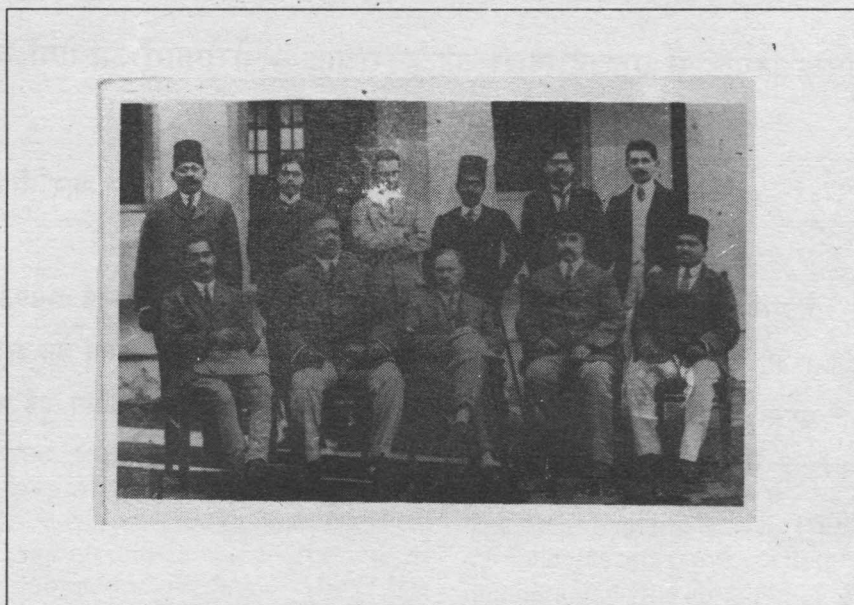
Lt. Col. Edward Lawrie retired from service in 1901 and returned to England. But controversy regarding the dangerous affects of Chloroform on heart continued. Dr. Levi, well known physiologists of England, ultimately proved conclusively that chloroform causes ventricular-fibrillation of heart, resulting in death of the animal.

Hence administration of chloroform on humans for anaesthesia - purposes came to an end. Sir Thomas Lauder Brunton who had participated in the IInd Hyderabad chloroform commission (1889) at Hyderabad, confirmed that the findings of Dr. Levi were correct and the conclusions of II Hyderabad chloroform Commission, that Chloroform has no adverse action on heart, was not correct. Lt. Col. Edward Lawrie died in

England in 1915. He is regarded by the medical historians as one of the foremost researcher who rendered valuable service by stimulating animal experiments on large scale to prove safety of a drug. It is unfortunate that his findings were later proved to be wrong. But the value of his efforts and pains taken to conduct such large scale experiments will remain a landmark in the history of medicine in general and in the history of anaesthesia in particular.

REFERENCES

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(Courtesy : Ind. Inst. of Hist. of Med. Hyderabad)

A Group photo of teaching staff of Hyderabad Medical School (c.1914). Seated left to right: Major M.G. Naidu, Dr. Md. Abdul Ghani, Col. Lumsdane, Dr. Khadiv Jung, Dr. S. Mallana.

Dr. Ghani, Dr. Naidu and Dr. Mallana accompanied Lawrie to London to demonstrate Hyderabad - Chloroform - Technique of Anaesthesia in London hospital. Demonstration on 25 May 1895 was successful. Dr. Md Abdul Ghani actually administered anaesthesia to a patient of appendicectomy and nephrectomy.

सारांश

वार्षिक रिपोर्ट में एडवर्ड लारी की हैदराबाद क्लोरोफार्म आयोगों की उपलब्धियों पर टिप्पणीयां

— एन.आर. गिरिधर

हैदराबाद क्लोरोफार्म आयोगों के विषय में निज़ाम सरकार की वर्ष 1893-94 की प्रशासकीय रिपोर्ट से प्राप्त डाक्टर एडवर्ड लारी की महत्त्वपूर्ण टिप्पणीयों को इस लेख में पुनः प्रस्तुत किया गया है । यद्यपि बाद में यह उपलब्धियां गलत साबित हुईं तथापि डा. लारी के अमूल्य प्रयत्न आयुर्विज्ञान के इतिहास में एक ऐतिहासिक घटना के रूप में सदा बने रहेंगे ।