INTRODUCTION
Scientists have been fascinated by muscle relaxant drugs ever since the discovery of use - by the Indian of the Amazon Basin - of poisoned arrows. These animals fell down alive, but were unable to run even if the trauma was trivial. This, perhaps, was the first unsubstantiated clinical impression related to relaxant - drugs.

Today, muscular relaxation is imperative for most surgical procedures. Previously, adequate relaxation could only be produced by deep planes of General Anaesthesia or various procedures of regional block.

In modern clinical practice a number of relaxant drugs are in use - all having their limitations, advantages and disadvantages. Introduction of these drugs has been hailed as one of the greatest advances of this era.

Thanks to these drugs, apart from endotracheal intubation and suction, today Anaesthetists can have full control of patient in situations that previously used to be disastrous. The relaxants have also significantly contributed to the technique of "balanced anaesthesia" (Lundy, 1942) which has brought pleasure and safety to the administration of anaesthesia. No more are the deep planes of anaesthesia necessary for the much needed relaxation. Today our surgical colleagues take all this for granted.

Further, by eliminating the work of breathing,
relaxants actually produce therapeutic relief in patients in shock and low general condition. In addition, Intermittent Positive Pressure Respiration (I.P.P.R.) if correctly given, can produce better ventilation than spontaneous breathing.

The introduction of suxamethonium in clinical practice in 1951 (Thesleff, S.; Brucke, H. et al.; Mayrhofer, O. et al.) caused still further excitement due to its capabilities of producing a short-lived but total muscular paralysis in the relative absence of side-effects - thus allowing the use of larger doses of the drug.

Over the years it was proved that the short-lived action of suxamethonium was due to its rapid hydrolysis by cholinesterase. Mendel and Rudney (1943) proved that two types of cholinesterases are present in the human body:

2. "Serum" cholinesterase.

This latter enzyme is responsible for the rapid hydrolysis of suxamethonium and is thus of clinical importance to the Anaesthesiologist.

Studies of the cholinesterase levels in different diseases and conditions have been carried out by various workers (Hall and Lucas, 1937; Faber, 1943; Kunkel et al.; 1947; Hutchinson et al., 1951; Vorhaus et al., 1953; Kaufman, 1954; Moore et al., 1957; Wetstone et al., 1960; Lanks et al., 1976 and Epstein, 1980).
It was found that the deficiency of serum cholinesterase may be of a quantitative or a qualitative nature. Quantitatively low values of the enzyme have been reported in association with the following diseases or conditions:

1. Liver diseases.
4. Chronic anaemias.
5. Organophosphorus exposure.
6. After therapeutic radiation.
7. After treatment with anti-cancer drugs.
8. Mid and last trimesters of pregnancy, labour and early post-partum days.
9. Severe dehydration and electrolyte imbalance.
10. Acute infections.

Quantitatively raised values have also been noticed in:

1. Obesity.
2. Nodular goitre.
3. Thyrotoxicosis.
5. Anxiety states.
7. Psoriasis.
8. Alcoholism.
Quantitatively low values of serum cholinesterase are of significance to an Anaesthetist since in such cases the body has reduced ability to metabolize suxamethonium and consequently its duration of action may be prolonged.

Later work by Kalow and his associates over the period 1957 - 1960 brought into light a smaller group of persons who were not ill, but were qualitatively deficient in serum cholinesterase. Presence of the "Atypical" serum cholinesterase in such persons is due to inheritance of an abnormal cholinesterase gene. The percentage inhibition of cholinesterase by the local anaesthetic drug dibucaine - denoted by "Dibucaine Number ( D.N. )" - was shown to distinguish between persons with normal serum cholinesterase and those with the qualitatively different serum. Various types of such qualitative deficiencies were seen and recorded - a fluoride - resistant gene (Harris and Whittaker, 1961), a silent - gene (Lidell et al., 1962), a C 5 - variant (Harris et al., 1963).

Aims of this study :-

It has been shown by Evans et al. in 1952, Argent et al. in 1955 and Vickers in 1963 that the cholinesterase enzyme activity must be greatly reduced before any significant prolongation of suxamethonium effect is observed. Still later King and McQueen in 1976 stated that the lower the cholinesterase activity and the dibucaine and fluoride numbers, the more prolonged the apneic response to suxamethonium.
In the light of these facts many workers are of the opinion that quantitatively or qualitatively decreased levels of serum cholinesterase contraindicate the use of suxamethonium.

Katz (1969) found that serum cholinesterase levels were higher in London than in New York patients.

Srinivasan (1972) found a high incidence of genetic abnormality as well as low levels of serum cholinesterase in patients belonging to Bundelkhand region. Prompted by this observation the present project was undertaken with an aim to make a proper survey of this deficiency in this region and to study its relationship to suxamethonium apnoea in patients operated at M.L.B. Medical College and Hospital, Jhansi.