



Unvaccinated COVID Positive Advanced Pregnancy – Challenges in Clinical Management – Lessons Learnt

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BACKGROUND

- COVID Pandemic has caught the whole humanity unaware.
- Pregnant women with advance pregnancy was a situation of panic - the consequences were not known.
- At risk – immunocompromised state, unvaccinated.
- The challenge to the treating Obstetrician was- new disease, no studies available;
 - no definite established protocol.
 - behaviour of virus uncertain due to mutations.
- Prevalence 0.73% in first wave and 4 fold higher in 2nd wave according to Govt. of India IJMR July-Aug 2020 Vol 152 issue 1-2P48-60.
- In this study centre tier 3 cities had to admit all patients in the short period of time between the 4th and 7th month for final outcome delivery and ensuing neonatal care.
- The Challenge was Clinical management of the unvaccinated COVID positive, advance trimester pregnant women(UCPAPW) observed for outcome after treatment evolving future guidelines, developing Machine Learning Software Solution (MLSS)
- The Tier3 city-India had to admit 100% cases in 100days treated and analysed for prognostication.

DIAGNOSTIC PATH

- The UCPAP treated in isolation ward by multidisciplinary specialists.
- Specific tests for all patients (BP,PR,CTscan,Hb, RTPCR) and random sample of few vital test - SPO2, Totalcount, Platelet, CRP, AST/ALT, ferritin ,IL6 ,Bloodurea,Creatinine were observed following standard procedure.
- Totally 21 variables along with covid symptoms and obstetric indications were observed.

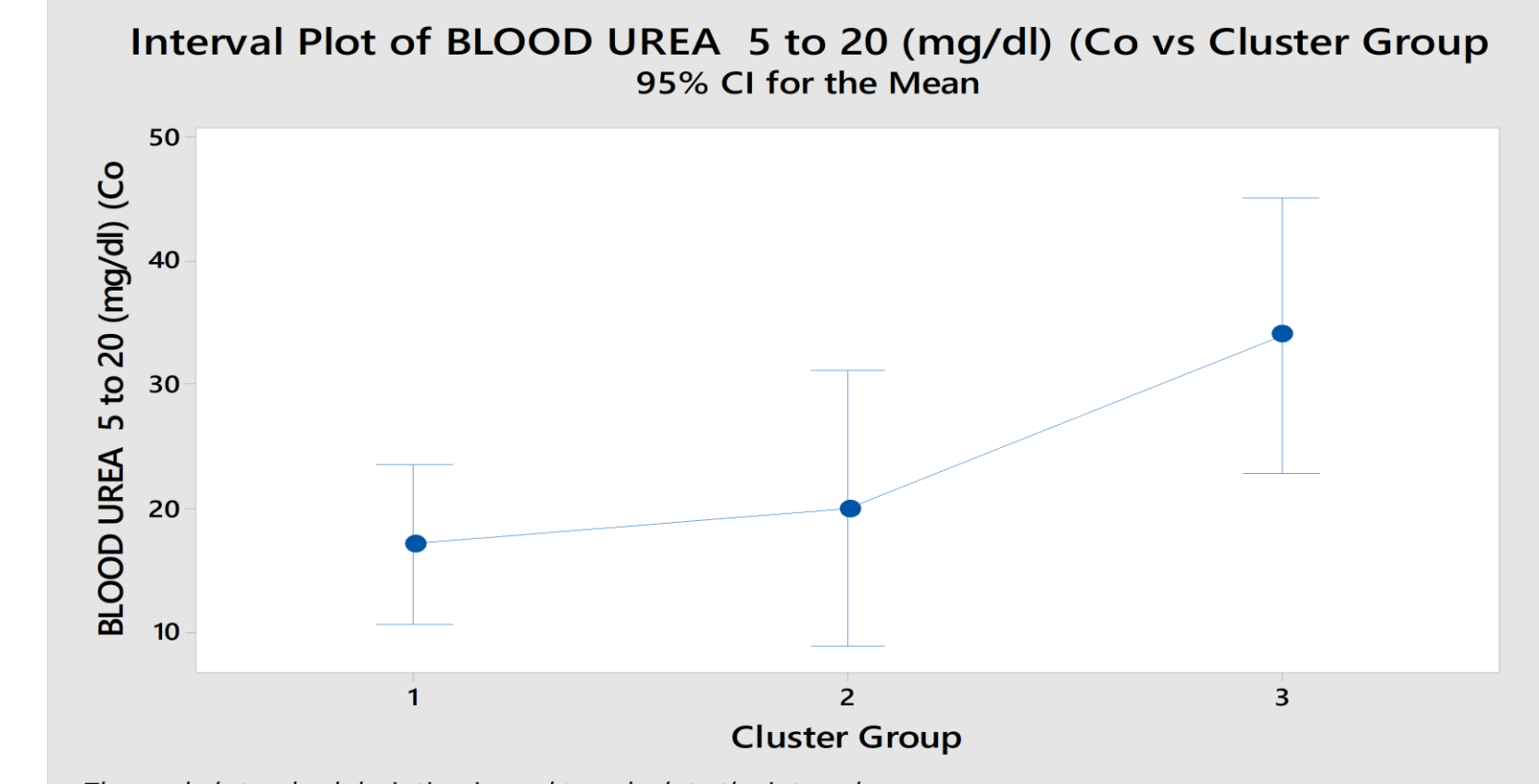
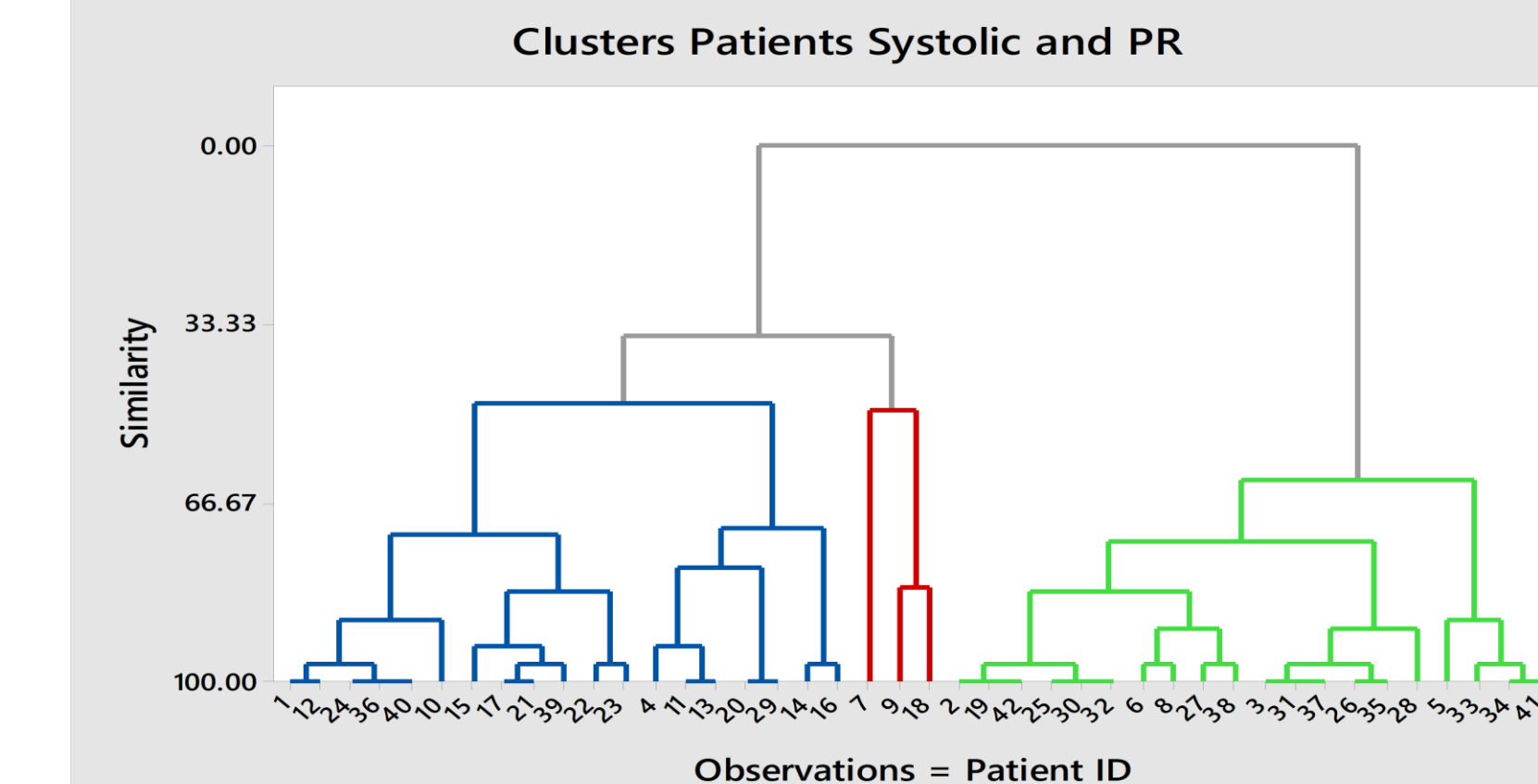
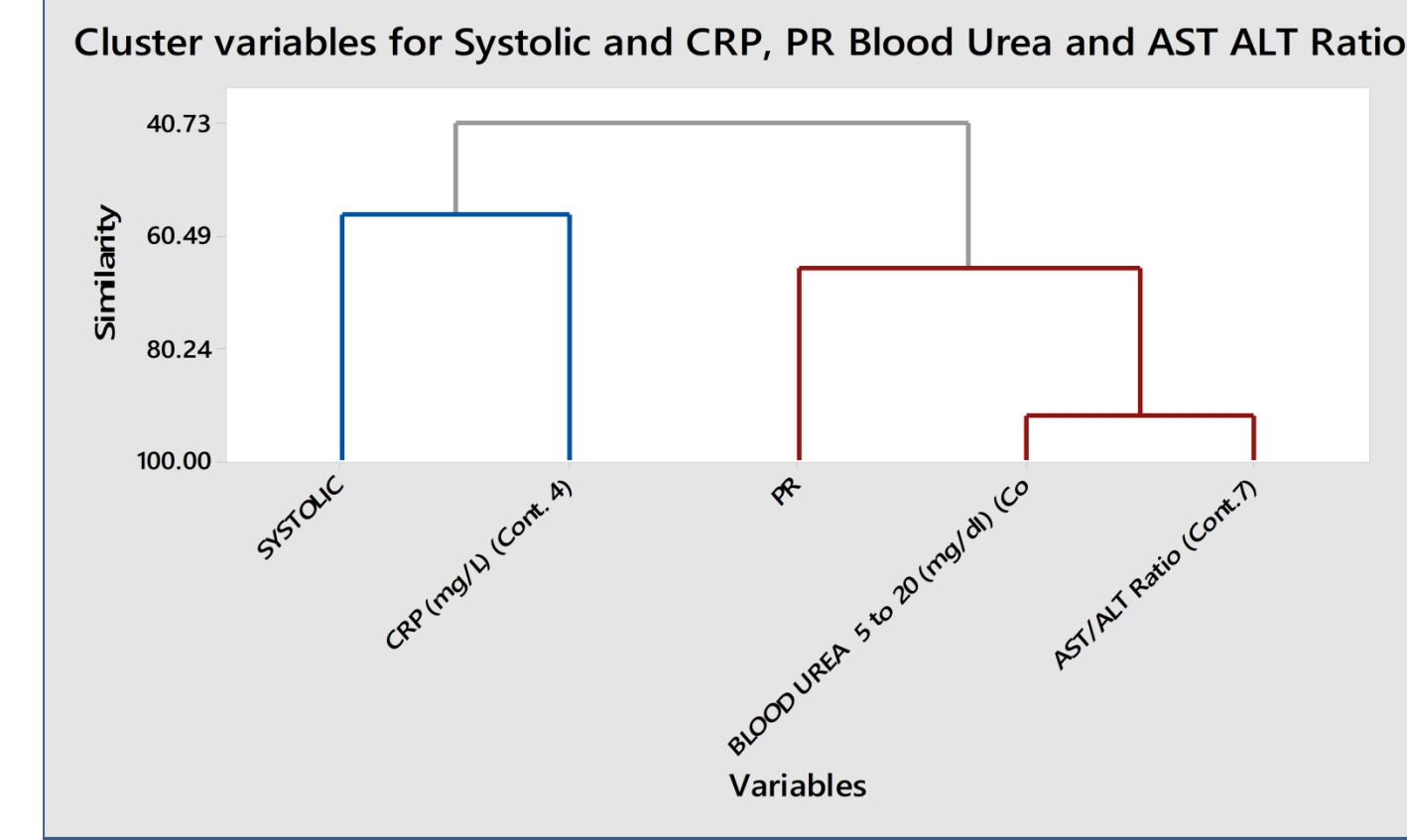
OBJECTIVE

- Prognosticating outcome (Mode of delivery, NICU admissions and hospital days) at affordable cost
- Determining factors to classify patients that decides the outcome significantly.

DESIGN

- ReCORD –Observed routine data where-
 - a) No planned collection of data-but data on presenting condition observed
 - b) Sample size was not pre-determined- but 100% of arrivals approximately over 100 days were Tracked, Tested, Trained, Treated and Traced to complete recovery.
 - c) All were not tested for all parameters - 100% tested parameter were BP, Pulse Rate, Hb, CT Scan
 - e) Others parameters were tested randomly on need based
 - Retrospective study (n=42)
- Supervised learning method and what is learnt ??
 - The end point outcomes are known from our data, therefore classification by cluster analysis and discriminant analysis enabling training of data-sets aiding possible outcome. Since the outcome is known from the past data-sets, it is possible to improve results by prudent clinical management.

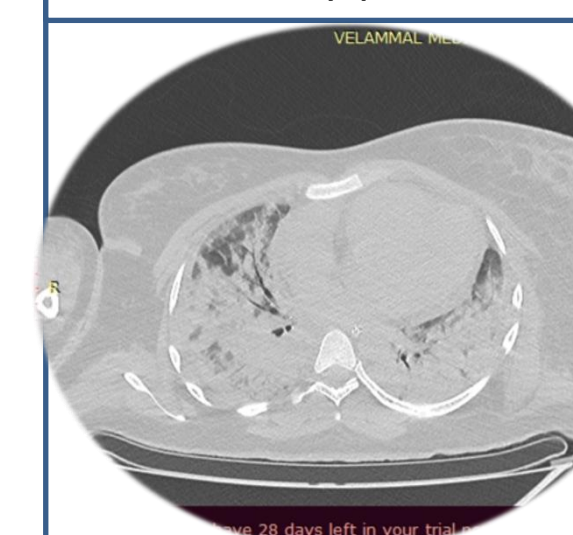
RESULTS



CLASSIFICATION BY VARIABLES

The Dendrogram among 21 variables, a few predictive biomarkers demanded 100% checking not at random, based on the interdependency of variables (Systolic, CRP, PR, Blood urea, AST/ALT ratio) for serial monitoring.

The classification by dissimilarity is more pronounced by CRP followed by pulse rate and blood urea by AST/ALT ratio.



PT. ID Row	CRP	AST	ALT	SERUM FERRITIN	IL-6	BLOOD UREA	CORADS	SERUM CREATININ E	SYSTOLIC BP	PULSE RATE	TYPE OF RISK
09	29.62	23	28	41.3	11.3	21	6	0.5	110/70	111	HIGH RISK

LESSONS LEARNT

STRENGTH OF STUDY AND LIMITATIONS

- the biomarkers namely (PR, SBP, CRP, AST,AST/ALT, ALP, S.ferritin, B.urea, Creatinine 8/21) required for serial monitoring have been identified.(it was not earlier 100% checked but in random)
- radiological exposure was corelated with the biomarkers as evidenced from the data.
- Given vitals- BP, PR, laboratory parameters were identified – Machine Learning Software Solution was generated as demonstrated prognosticating the probable outcome on NICU admission, Hospital days and emergency LSCS according to the type of intervention .
- Strength of study – in advanced pregnancy and presenting condition, it was possible to prognosticate outcome for improved course of treatment.
- Limitations- Results could not be validated for further observation as there was no such cases reported. However under forthcoming mutation this software based prognostication by MLSS can be used. However the patient needs to consult near by doctors though a general guideline is prescribed here.