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Relonics Systems Information Modeling in Clinical Depression

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ABSTRACT

Application of Relonics Systems Information Modeling for evaluation of seemingly normal routine readily available biochemical laboratory tests revealed for the first time that different forms of clinical depression are strongly associated with specific patterns of metabolic abnormalities and may eventually clarify the metabolic determinants of clinical depression.

KEY WORDS: Relonics, Psychiatry, Major Depression with Alcoholism, Postpartum Atypical Depression, System Information Modeling,

INTRODUCTION

It is known that depressive disorders is a significant problem throughout the world [1] and the most common psychiatric problems in primary care setting with a prevalence of 4.8% to 9.2% [2]. Current statistics indicate that at least 14 million Americans suffer from depression [3]. The health-care cost and loss of productivity due to depression in the United States alone has been estimated at $43 billion annually [4,5], and the economic burden of this disorder rivals that of cardiac disease [2].

PURPOSE

The purpose of this presentation is to determine relonics patterns [6, 7] in seemingly normal routine biochemical laboratory variables: Albumin, (ALB), Calcium (CAL), Phosphorus (PHO), AST (SGO), Glucose (GLU), Alkaline Phosphotase (ALK), LDH, Total Bilirubin (T.B), BUN, Uric Acid (UR.), Cholesterol (CHO), Total Protein (T.P) in different clinically important forms of depression in the outpatient psychiatry setting.

RESULTS

The following pages represent relonics patterns in four different conditions: good response to treatment (Fig. 1A) versus treatment-resistance (Fig. 1B) in major depression with alcoholism; and good response to treatment (Fig. 2A) versus treatment-resistance of postpartum atypical depression (Fig. 2B).

Relonics patterns are presented in a format of six consecutive windows. One window (upper left) represents the pattern of total abnormal relationships which is a combination of patterns of five distinct types of abnormal systems-specific relationships known as relons [7].

DISCUSSION

Fig. 1A and Fig. 1B clearly demonstrate that major depression with alcoholism is associated with distinct relonics patterns of metabolic abnormalities. It is important to emphasize that those patterns were detected among twelve routine biochemical variables with no evidence of any overt metabolic abnormalities..

Relonics patterns of good response to treatment show only two different types of abnormal systems-specific relationships (Fig. 1A) versus four different types of abnormal systems-specific relationships which are associated with treatment- resistant response (Fig. 1B). Also, it is evident that relonics patterns of treatment-resistant response is significantly different from patterns associated with good response to treatment. They are

more complex, more severe and more extensive [8, 9, 10, 11, 12, 13]. In postpartum atypical depression with treatment-resistant response (Fig. 2B), relonics patterns are also more extensive, more severe and more complex, but in a very different way compared to major depression with alcoholism (Fig. 2B).

It is important to note that relonics patterns of treatment-resistant responses in both types of clinical depression are not only significantly distinct from each other. They are also distinct from patterns associated with good responses. Treatment-resistance in both types of depressions clearly exhibits an existence of common tendency in increasing severity, in increasing complexity, and in increasing extent of relonics metabolic abnormalities.

CONCLUSIONS

Application of Relonics Systems Information Modeling for evaluation of seemingly normal routine readily available biochemical laboratory tests revealed for the first time that different forms of clinical depression are strongly associated with specific patterns of metabolic abnormalities and may eventually clarify the metabolic determinants of clinical depression. Such metabolic characteristics also can contribute to a better understanding of biological factors underlying psychiatric diseases and can be used as a basis for response modification to chosen treatment regimen. Relonics allows early recognition of patient response to treatment, and can improve treatment options prior to starting antidepressant medications. Relonics assessment of routine metabolic variables should not be neglected in any medically oriented treatment of depression.

REFERENCES

[1] S.A. Young, N. Campbell, A. Harper, Depression in Women of Reproductive Age, *Postgraduate Medicine*, *112*/3, 45-50.

[2] S.L. Dubovsky, R. Buzan, Mood Disorders, *The American Psychiatric Press textbook of psychiatry,* 3rd. ed., 1999, 479-565.

[3] W.E. Narrow, D.S. Rae, L.N. Robins, et al., Revised prevalence estimates of mental disorders in the United States using a clinical significance criterion to reconcile 2 survey's estimates, *Archives of General Psychiatry*, 2002, *59*/2, 115-123.

[4] M.P. Pignone, B.N. Gaynes, J.L. Rushton, et al, Screening for depression in adults: a summary of the evidence for the US Preventive Services Task Force, *Annals of Internal Medicine*, 2002, *136*, 765-776.

[5] H.A. Pincus, A.R. Pettit, The societal costs of chronic major depression, *Journal of Clinical Psychiatry*, 2001, *62*/Suppl. 6, 5-9.

[6] V.I. Kvitash, Applications of Relonics Systems Information Modeling in Medicine, *Proceedings of the IASTED International Conference, Modelling and Simulation*, Marina del Rey, CA, 2002, 391-396.

[7] V.I. Kvitash, Relonics Balascopy-Based Systems-Specific Technology, (Accepted for publication in Kybernetes).

[8] V.I. Kvitash, Relonics Languages for Systems Information Modeling, *Proceedings of the IASTED International Conference*, *Modelling and Simulation,* Marina del Rey, CA, 2002, 385-386.

[9] V.I. Kvitash, Balascopy: Method for Detecting and Rapidly Evaluating Multiple Imbalances within Multi-Parametric Systems, *U.S. Patent No. 4,527,240.*

[10] V.I. Kvitash, Balascopy System and Method with Improved Sensitivity, *U.S. Patent Pending.*

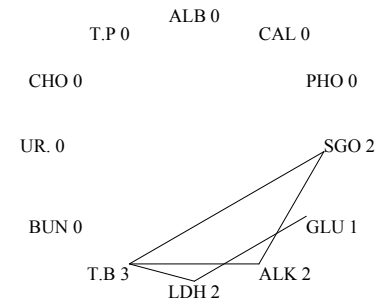
[11] V.I. Kvitash, Balascopy as a Tool for Heuristic Diagnosis, *AAMSI Congress 83, Proceedings of the Congress on Medical Informatics*, San Francisco, CA, 1983, 121- 125.

[12] V.I. Kvitash, Balascopy: An Emerging Tool for Diagnostic Medicine, *American Clinical Laboratory*, *21*(5), 2002, 28-30.

[13] V.I. Kvitash, Balascopy: A New Generation of Information Technology, *American Biotechnology Laboratory*, *20*(11), 2002, 36-38.

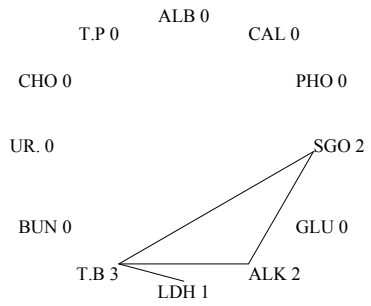
Fig.1A Major Depression with Alcoholism, Good Response to Tx

Total Abnormal Relationships



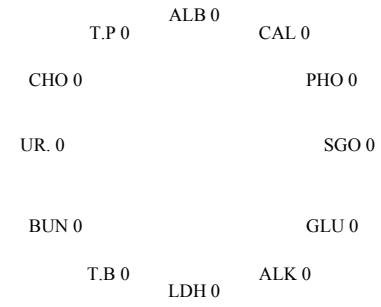
TAR = 8% **ASI = 1** **ILL = 0**

Normal but inverted Type



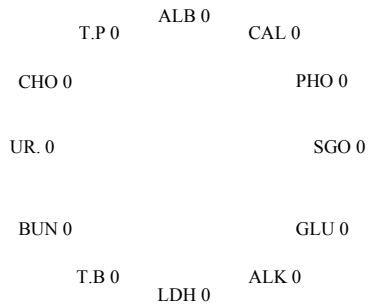
Ni = 6%

Integrated Type



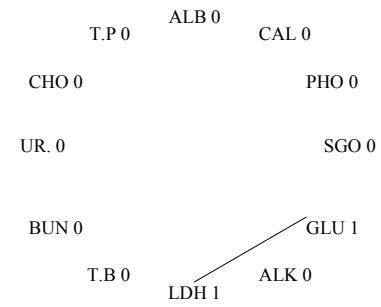
I. = 0% **ASI = 0** **ILL = 0**

Integrated & inverted Type



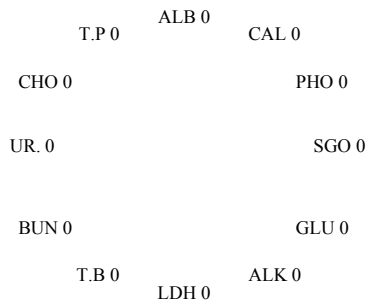
Ii = 0% **ASI = 0** **ILL = 0**

Disintegrated Type



D. = 2% **ASI = 1** **ILL = 0**

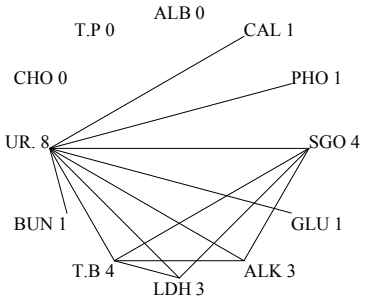
Disintegrated & inverted Type



Di = 0% **ASI = 0** **ILL = 0**

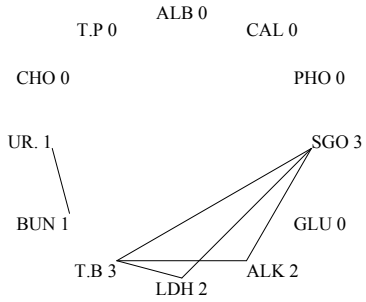
Fig.1B Major Depression with Alcoholism, Treatment-Resistant

Total Abnormal Relationships



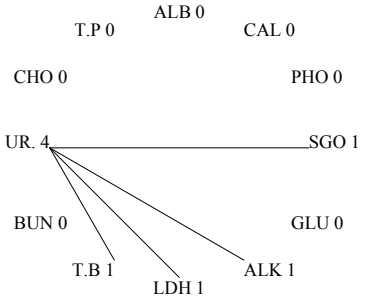
TAR = 20% ASI = 50 ILL = 71

Normal but inverted Type



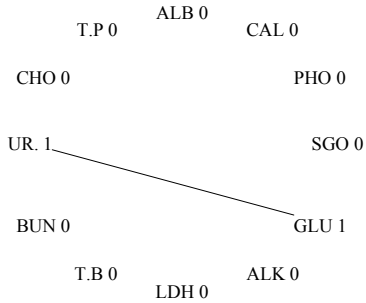
Ni = 9%

Integrated Type



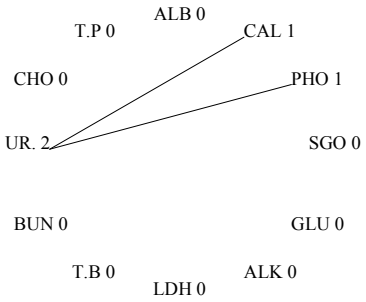
I. = 6% ASI = 64 ILL = 25

Integrated & inverted Type



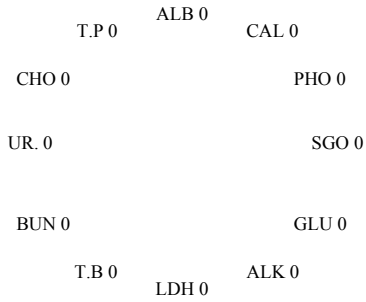
Ii = 2% ASI = 87 ILL = 0

Disintegrated Type



D. = 3% ASI = 2 ILL = 46

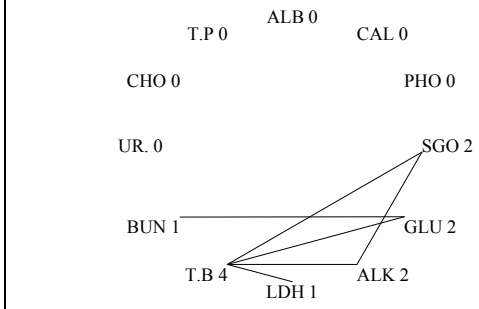
Disintegrated & inverted Type



Di = 0% ASI = 0 ILL = 0

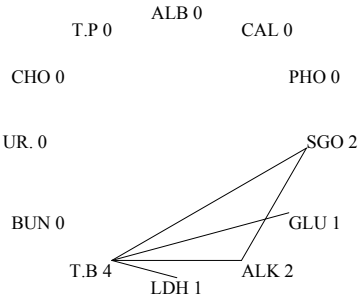
Fig.2A Postpartum Atypical Depression, Good Response to Tx.

Total Abnormal Relationships



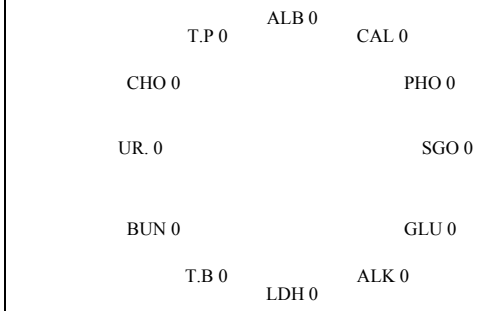
TAR = 9% **ASI = 0** **ILL = 0**

Normal but inverted Type



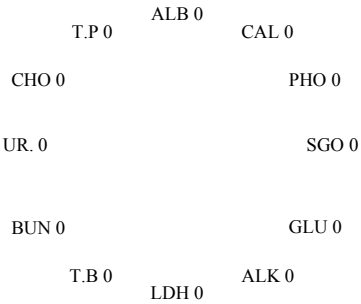
Ni = 8%

Integrated Type



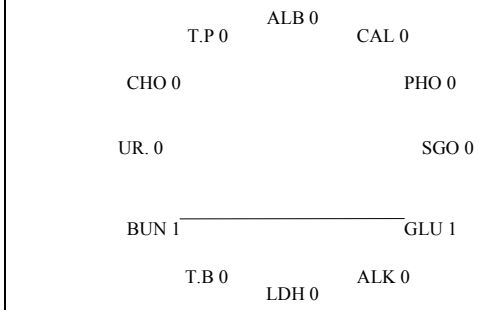
I. = 0% **ASI = 0** **ILL = 0**

Integrated & inverted Type



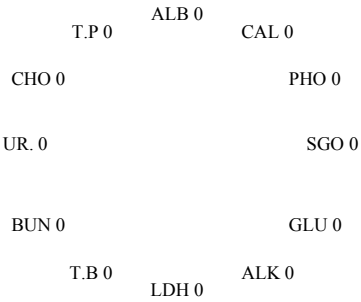
Ii = 0% **ASI = 0** **ILL = 0**

Disintegrated Type



D. = 2% **ASI = 0** **ILL = 0**

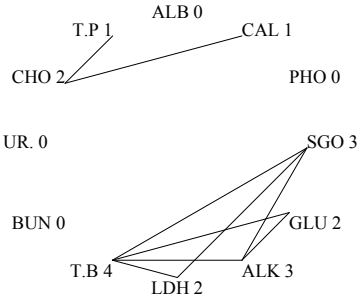
Disintegrated & inverted Type



Di = 0% **ASI = 0** **ILL = 0**

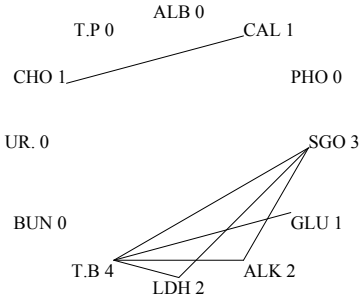
Fig.2B Postpartum Atypical Depression, Treatment-Resistant

Total Abnormal Relationships



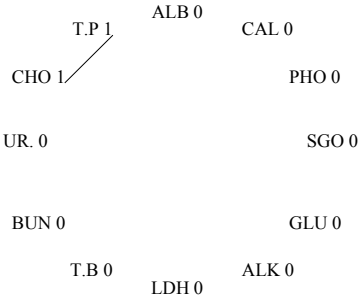
TAR = 14% ASI = 52 ILL = 100

Normal but inverted Type



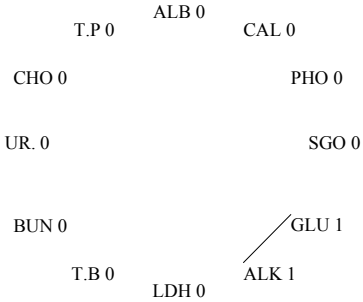
Ni = 11%

Integrated Type



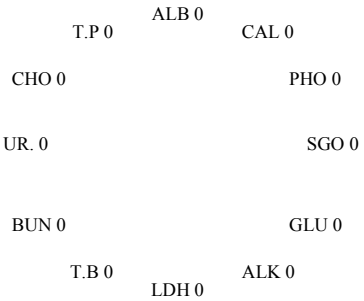
I. = 2% ASI = 3 ILL = 0

Integrated & inverted Type



Ii = 2% ASI = 100 ILL = 0

Disintegrated Type



D. = 0% ASI = 0 ILL = 0

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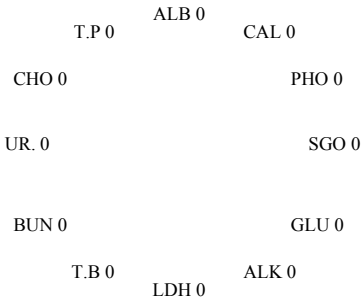

Di = 0% ASI = 0 ILL = 0