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Impact of rauwolfia serpentina on patients with schizophrenia

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Abstract
Rauwolfia serpentina is a homeopathy medicine that effectively lowers blood pressure, found to be beneficial in cases of insanity, violent manic episodes, and central nervous system irritation. The current study's goal is to investigate the impact of Rauwolfia on schizophrenia patients, the purposive sample was comprised of sixty male, middle-class, low-socio-economic status (aged 30 to 40) who were receiving treatment at a psychiatric hospital rehabilitation center. The study employs Rauwolfia serpentina as a medicinal intervention, and the Positive and Negative Syndrome Scale (PANSS) is used to analyze the pretest and posttest effects. The paired t-test is used as a statistical measure to interpret the results, and the t-score of 31.081 is considered significant at $p<0.00$. Therefore, the alternate hypothesis is accepted, indicating a significant effect of Rauwolfia on the schizophrenia patient. Also, it demonstrates how the homeopathic remedy Rauwolfia serpentina was found to be beneficial for treating positive symptoms of schizophrenia, such as grandiosity, delusional beliefs, conceptual disarray, hallucinatory behavior, excitement or hyperactivity, and hostile behavior.

Keywords: PANSS, Rauwolfia serpentina, schizophrenia, pre-test and post-test group

Introduction

Rauwolfia Serpentινα (Rau. serp.)

Indian Culture: The Atharva Veda, written about 700 B.C., discussed the use of medications (Rauwolfia), psychotherapy, and supernatural agents in healing.

Botanical name-Rauwolfia serpentina Benth, ex Kurze, with Common names Hindi: Sarpagandha, Chotachand, belonging from the Family of Apocynaceae.

The Rauwolfia serpentine is a tiny, up to one-meter-tall, upright, glabrous shrub with pale-colored bark. Whorled leaves that are thin and pale below, lanceolate or oblanceolate, acute or acuminate, and gradually taper into the petiole. Measures 7 to 18 cm long by 1.25 to 5 cm broad. A terminal or lateral corymbose cyme holds the white or pinkish flowers. The peduncles are about 2.5 to 5 cm long, the calyx and pedicels are red, the bracts are minute and lanceolate, and the calyx lobes are 2 mm long. The petals are about 12 mm long, the tube is slender and inflated slightly above the middle, and the lobes are elliptic, oblong, and obtuse, much shorter than the tube. Membrane disc that is somewhat lobed. When mature, didymous or solitary drupes with a diameter of around 6 mm become purplish-black in color. Its macroscopic examination reveals that the root is robust, thick, around 10 cm long and 2 to 22 mm in diameter, tortuous, with a slightly wrinkled surface, rough longitudinal lines, infrequent branching, short, irregular fractures, and pale yellow wood. The Microscopical analysis reveals that in the transverse section, there are two to eight alternating bands of cork cells that are radially narrow and broader; thin cells that are lignified, up to 75 µ in tangential width, broader cells that are up to about 90 u in radial length; phelloderm, which is tangentially elongated to isodiametric, parenchyma cells, containing starch and short latex cells with brown resinous matter; parenchyma contains starch and angular crystals of calcium oxalate, measuring three to twenty µ in length; secondary xylem makes up four fifths of the root's diameter; wood is traversed by medullary rays, with one to five cells in width; Wood parenchyma, trachieds, vessels, and woody fibers make up xylem. Vessels are small, lignified, and can measure up to 350 µ in length and 50 µ in width, or rarely more. Trachieds are lignified and have pitted walls. Wood parenchyma has moderately thick, starch-containing walls that are lignified and pitted.

Wood fibers are highly thickened and have pointed or bifurcated ends, measuring 200 to 750 µ in length, arranged in tangential bands and radial rows. Simple or two to three complex starch, spherical to sub-spherical; lacks stone cells. The root is the portion that is employed, and Rauwolfia serpentina prepares it by combining 100 g of coarse powder with 200 ml of filtered water and 824 ml of strong alcohol to form 1,000 milliliters of Mother Tincture, which has potencies that are at least two times higher than those of dispensing alcohol.

The Western Ghats of India and the sub-Himalayan mountains are home to Rauwolfia serpentina, Drs. SC Ghose and W Templeton provide the Proof. A few significant events in Indian psychiatry are also listed here: Ganesh Sen and Kartik Bose (1931) [10] described the use of Rauwolfia extract (Reserpine) in the treatment of psychoses; S Siddiqui and R Siddiqui (1931) [11] isolated Reserpine from Rauwolfia. Rauwolfia Serpentina is meant to lower blood pressure. Found to be beneficial in cases of insanity, violent manic episodes, and central nervous system irritation.

Rauwolfia Clinical use

Elevated blood pressure and indications of necrosis.

Symptoms

Elevated blood pressure without obvious vascular atheromatous alterations. Insanity; indications of extreme mania; central nervous system irritation.

Dosage

Initially, provide 5 to 10 drops of tincture every four hours. Thereafter, administer 1x, 2 tabs, twice a day.

Rauwolfia Serpentina is meant to lower blood pressure. Found to be beneficial in cases of insanity, violent manic episodes, and central nervous system irritation.

Delusions or severe hallucinations are a common feature of schizophrenia, a persistent mental illness. It is not necessary for the person to be actively psychotic for the whole six-month period; only that they have to be unwell. Although they are not included in the DSM-5 as distinct phases, physicians acknowledge three periods of the condition. The decline in functioning before to the start of the active psychotic phase is referred to as the prodromal period. A minimum of one month must pass during the active period before the delusions, hallucinations, clumsiness in speech or conduct, or negative symptoms like avolition, alogia, or flat affect appear, following the active phase is the residual phase.

The prodromal and residual stages are characterized by problems in emotion, cognition, and communication as well as functional disability. The most prevalent symptoms that were present at the time of the evaluation determined the subtype of schizophrenia in the DSM-IV; these subtypes-paranoid, disorganized, catatonic, undifferentiated, and residual types are no longer included in the official DSM-5 nomenclature. However, they fit within ICD-10 and are phenomenologically true.

The DSM 5 lists Diagnostic Criteria 295.90 (F20.9) for schizophrenia

A. Two or more of the following, each present for a considerable amount of time over the course of a month (or shorter if the condition is properly treated). One of these must be (1), (2), or (3) at the very least.

1. Delusions.
2. Hallucinations.
3. Disorganized speech (e.g., frequent derailment or incoherence).
4. Grossly disorganized or catatonic behavior.
5. Negative symptoms (i.e., diminished emotional expression or avolition).

B. The level of functioning in one or more major areas, such as work, interpersonal relations, or self-care, has been significantly lower than it was before the disturbance started for a sizable period of time (or, in the case of a childhood or adolescence, the expected level of interpersonal, academic, or occupational functioning is not met).

C. The disturbance has persistent symptoms for at least six months. The symptoms that match Criterion A, or active-phase symptoms, must be present for at least one month over this six-month period (or fewer if treatment is successful). Prodromal or residual symptom phases may also be present. The indicators of the disturbance may appear during these prodromal or residual periods as a single negative symptom or as two or more attenuated symptoms indicated in Criterion A (e.g., strange beliefs, aberrant perceptual experiences).

D. The diagnosis of schizoaffective disorder and depressive or bipolar disorder with psychotic features has been excluded because, either 1, there haven't been any significant manic or depressive episodes that coincide with the active-phase symptoms, or 2, if there have been mood episodes during the active-phase symptoms, they've only been present for a small portion of the time between the active and residual phases of the illness.

E. The disturbance cannot be attributed to a medical condition or the physiological effects of a substance (such as an illicit drug or prescription).

F. In cases where there has been a history of autism spectrum disorder or childhood-onset communication disorder, a second diagnosis of schizophrenia is only given if significant delusions or hallucinations have been present for at least one month (or less if treatment is successful) in addition to the other necessary symptoms of the illness.

As per Gupta JC, *et al.* (1943) [7], early Observations on the Use of Rauwolfia Serpentina Benth in Their Study. Fifteen individuals with a range of mental disorders have received treatment with the standardized Rauwolfia serpentina Benth extract in the Treatment of Mental Disorders. These included five with affective reaction disorder, seven with schizophrenia, two with organic psychoses, and one with chronic epilepsy. Another investigation on the use of Rauwolfia serpentina in psychiatry was conducted by Ray, PK (1952) [9], the effects of Rauwolfia serpentina on mental symptoms, such as excitement, singing, psychomotor hyperactivity, excessive speech, verbegeration, echolalia, punning, and rhyming, seem to be beneficial. These symptoms also seem to be controlled quickly after treatment begins when taken in appropriate dosages. Delusions and hallucinations require a considerable amount of time to resolve in appropriate dosages, which must be determined

for each individual instance. It also takes a while for this medicine to moderate elation and flight of thoughts. Glynn JD (1955) [8], psychiatry: Rauwolfia serpentina (Serpasil). They came to the conclusion that Rauwolfia serpentina, often known as "Serpasil", is a rich sedative that works well in psychiatric hospitals, albeit not always. It has a relaxing impact on psychomotor excitation and lowers anxiety and drive. Psychotherapy is more accessible to patients under its effect. Another research by H Azima *et al*. (1959) [2], looked at the impact of derivatives of Rauwolfia on dream and schizophrenia states. Two neurotic patients getting intense psychotherapy and a limited number of schizophrenia patients (20 chronic and 10 recent instances) were the subjects of the experiment, which involved intense psychodynamic analysis. All patients were given Rauwolfia and placebos. A breakdown in defenses was observed in the schizophrenia patients, along with the onset of very violent urges and what seemed to be a partial transition from paranoid to manic-depressive organization. When Rauwolfia was administered, there was a rise in the number of dream forms in the neurotic patients. A study by Ajao MS, *et al*. (2015) [3], they came to the conclusion that Rauwolfia vomitoria, a better alternative agent, may have higher therapeutic potential for treating psychosis and may be able to correct cognitive deficits associated with psychosis. An additional MN, (2018) [4] discovery, shown the usefulness of Asrol, or Rauwolfia serpentina, a medication that Unani doctors have traditionally used. Numerous medical benefits include anti-hypertensive (Dafye Fisharuddam Qawi), anti-migraine (Dard-E-Shaqiqa), nervine sedative (Musakkine-Asab), vasodilator (Mufattih), hypnotic (Munawwim), and hypnotic (Malan khuliay). Some studies also suggest that it may be beneficial for hysteria (Akhtanaqur Reham), insanity (Junoon), insanity (Junoon), and epilepsy (Mufye).

Objective

- To study the impact of Rauwolfia on schizophrenia patients.

Hypothesis

Ho: There would be no significant difference of Rauwolfia on the patient with schizophrenia.

H1: There would be significant difference of Rauwolfia on the patient with schizophrenia.

Methods

Sample

The inclusion criteria comprise the purposive sample of sixty male patients with schizophrenia (ages 30 to 40) from middle to lower socio-economic backgrounds who are receiving treatment at a psychiatric hospital and rehabilitation center. The other co-morbid psychiatric disorders are not included in this sample.

Research Design

A quasi-experimental study design utilizing the time series design approach is employed, wherein the group receives a pretest (O1), treatment X for seven days, and a posttest (O2) on the same group. The pretest and posttest are administered using the Positive and Negative Syndrome Scale, or PANSS. Additionally, Rauwolfia serpentina medicine is employed in therapy. SPSS 20 version statistical software was used to examine the data. A paired t-test was used for hypothesis testing in order for investigating the variation in the group's PANSS test scores before and after.

Variables

IV Independent Variable: Rauwolfia Serpentina.

DV Dependent Variable: Patient’s with schizophrenia.

Tools used

The Positive and Negative Syndrome Scale (PANSS) is a medical tool used to gauge the intensity of symptoms in people with schizophrenia. Lewis Opler, Abraham Fiszbein, and Stanley Kay published it in 1987. The research of antipsychotic treatment makes extensive use of it. The "gold standard" for assessing how well psychopharmacological therapies work is this scale. The American Psychiatric Association defines positive and negative symptoms as follows: positive symptoms are an excess or distortion of normal functions (such as hallucinations and delusions) and negative symptoms are a diminution or loss of normal functions. These two types of symptoms are referred to by the name when discussing schizophrenia. The capacity to distinguish between reality and imagination, think and act normally, and appropriately express emotions are a few of these skills that might be lost. Ten of the thirty questions in the PANSS are divided into three categories: A General Psychopathology Scale (numbering sixteen) and a Positive Scale (numbering seven). The ratings for each of the components are added up to determine the scores for these scales. Thus, the possible ranges for the General Psychopathology Scale are 16 to 112 while the Positive and Negative Scales are 7 to 49. A Composite Scale is also calculated by deducting the negative score from the positive score in addition to these measurements. As a result, a bipolar index is produced that has a range of -42 to +42. This bipolar index is simply a difference score that indicates how dominant one condition is over the other. The PANSS interview is 45 to 50 minutes long, so it's comparatively quick. It is necessary to teach the interviewer to a consistent degree of dependability.

Procedure

After obtaining the patient's informant's consent to collect data for treatment and sample collection, the pretest PANSS is administered to a sample of 60 patients seeking psychiatric treatment for schizophrenia. The treatment is then administered as Rauwolfia serpentina for a subsequent 7 days in a hospitalized setting, taking all safety precautions into consideration. A week later, the same group of representative samples receives a posttest. Both the pretest and the posttest are completed by qualified experts based on observation.

Results and Discussion

Test scores were calculated according to the manual's scoring guidelines. According to the goals of the study, the scores were classified and tallied. Using the paired t-test approach, data was evaluated.

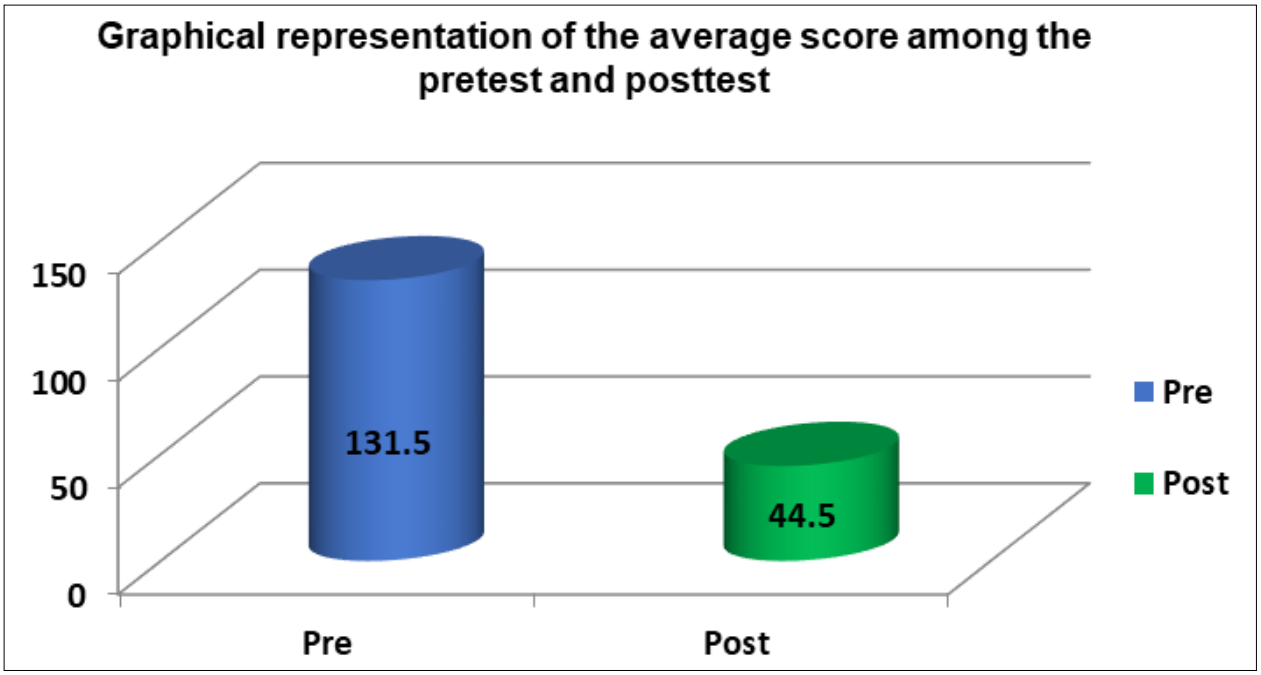
Table 1: Showing the mean score and the standard deviation of the pretest and posttest of the represented sample

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-	131.516	60	19.539	2.522
	Post	44.583	60	10.717	1.383

	Paired Differences					T-Score	DF	Sig. (2-Tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the difference		Mean	Std. Deviation	Std. Error Mean
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Pair-1, Pre-Post	86.933	21.665	2.796	81.336	92.530	31.081	59	.000

Table 2: Paired Samples Correlation among the pretest and posttest of the represented sample

		N	Correlation	Sig.
Pair 1	Pre & Post	60	.065	.621



Graph 1: Graphical representation of the average score among the pretest and posttest among the represented sample

According to Table No. 1, the posttest mean score is 44.583 with an SD of 10.717, while the pretest mean score is 131.516 with an SD of 19.539. The above mentioned data indicates that the post-intervention PANSS score in the posttest group has a lower mean value. The t-value, which is set at 31.081, indicates a significant difference between the pre and post-PANSS scores (p<0.001). As a result, the alternative hypothesis that the schizophrenic patient has a notable variation in Rauwolfia is accepted. As it shows that the medication Rauwolfia Serpentina has been discovered to be beneficial in treating the patient's schizophrenia by assisting in the reduction of positive symptoms, such as delusional beliefs that are deemed illogical, irrational, and peculiar. Conceptual disarray is characterized by tangentiality, loss of associations, goal-directed sequencing breakdown, hallucinatory behavior, excitement, including hyperactivity, hypervigilance, or severe mood swings. Grandiosity is defined as having a false sense of superiority and an overblown sense of one's own skills. It has been discovered that the patient has a reduction in feelings of suspicion, persecution, and hostility, as well as vocal and nonverbal manifestations of rage and resentment. Additional studies that supported the findings include one by Gupta, JC, *et al*. (1943) [7], Initial Notes on the Application of Rauwolfia Serpentina Benth in Their Research. In the Treatment of Mental Disorders, a standardized extract of Rauwolfia serpentina Benth has been used to treat fifteen individuals with diverse mental disorders. Of them, five had affective reaction disorder, seven had schizophrenia, two had organic psychoses, and the other one had chronic epilepsy. Additionally, another investigation on the use of Rauwolfia serpentina in psychiatry was supported by Ray PK (1952) [9], when taken in appropriate dosages, Rauwolfia serpentina appears to have a clear positive effect on mental symptoms such as excitement, singing, psychomotor hyperactivity, excessive speech including verbegeration, echolalia, punning, and rhyming, among others. These symptoms usually go under control quickly after treatment begins. It takes some time to eliminate delusions and hallucinations in appropriate dosages; this needs to be determined for each patient separately. This medication takes a while to manage elation and flight of thoughts in addition to a research conducted in (2015) by Ajao MS, *et al.*, Rauwolfia vomitoria was shown to have higher therapeutic promise as an alternate agent for treating psychosis and to have the ability to correct cognitive deficits associated with the disorder [3].

Conclusion

The Analysis's conclusion of 60 schizophrenia patients, the study finds that Rauwolfia serpentina benefits from positive symptoms of the disease, such as delusional beliefs, conceptual disarray, hallucinatory behavior, excitement or hyperactivity, grandiosity, and irrational notions of persecution and hostility. This document is only a practical component that is being released in the hopes that it would inspire others to continue similar work.

Limitations of the study

This study is limited in its objectives and sample size. Additionally, because Rauwolfia serpentina is also used to lower blood pressure, it must be taken into mind that patients who have hypotension should not be treated with it.

Implications of the study

The results of this study may also be used to the homeopathic treatment of psychosis and other manic symptoms using Rauwolfia serpentina. A larger sample size can also be used to make generalizations.

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