

Clinical Risks, Ethical and the Weakness of Scientific Evidence

Soroterapia: Riscos Clínico, Éticos e a Fragilidade da Evidência Científica

Sueroterapia: Riesgos Clínicos, Éticos y la Fragilidad de la Evidencia Científica

RESUMO

A soroterapia, infusão intravenosa de nutrientes, tem ganhado popularidade como prática estética e de bem-estar, embora faltem evidências científicas que comprovem sua eficácia e segurança. Objetivo: Analisar os riscos clínicos e implicações éticas do uso da soroterapia sem indicação médica, por meio de revisão integrativa da literatura. Resultados: Os estudos mostram que a infusão não é superior à suplementação oral e pode causar hipervitaminoses, reações adversas locais e sistêmicas, além de complicações graves. A aplicação sem respaldo científico configura potencial infração ética, podendo caracterizar exercício irregular da profissão ou charlatanismo. Conclusão: a soroterapia deve ser restrita a casos com indicação clínica comprovada e supervisionada por profissional habilitado.

DESCRIPTORES: Medicina baseada em evidências; Ética médica; Soroterapia; Infusão de nutrientes; Suplementação intravenosa.

ABSTRACT

Serotherapy, the intravenous infusion of nutrients, has gained popularity as an aesthetic and wellness practice, although scientific evidence supporting its efficacy and safety is lacking. This study analyzed the clinical risks and ethical implications of using serotherapy without medical indication through an integrative literature review. Results show that infusion is not superior to oral supplementation and may cause hypervitaminosis, local and systemic adverse reactions, as well as severe complications. Its use without scientific support constitutes a potential ethical violation, possibly qualifying as unauthorized practice or quackery. It is concluded that serotherapy should be limited to cases with proven clinical indication and performed under the supervision of a qualified professional.

DESCRIPTORS: Evidence-Based Medicine; Ethics, Medical; Fluid Therapy; Parenteral Nutrition; Dietary Supplements.

RESUMEN

La seroterapia, infusión intravenosa de nutrientes, ha ganado popularidad como práctica estética y de bienestar, aunque carece de evidencia científica que respalde su eficacia y seguridad. Objetivo: Analizar los riesgos clínicos e implicaciones éticas del uso de la seroterapia sin indicación médica, mediante una revisión integrativa de la literatura. Resultados: Los estudios muestran que la infusión no es superior a la suplementación oral y puede causar hipervitaminosis, reacciones adversas locales y sistémicas, además de complicaciones graves. La aplicación sin respaldo científico constituye una posible infracción ética, pudiendo considerarse ejercicio profesional irregular o charlatanismo. Conclusión: La seroterapia debe limitarse a casos con indicación clínica comprobada y realizarse bajo la supervisión de un profesional capacitado.

DESCRIPTORES: Medicina basada en la evidencia; Ética médica; Sueroterapia; Infusión de nutrientes; Suplementación intravenosa.

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INTRODUCTION

The popularization of serum therapy¹ on social media, driven by influencers and sensationalist language, reinforces the commodification of care and the medicalization of well-being as an immediate solution, without scientific support¹⁻³.

Despite the importance of nutrition for immunity, the indiscriminate infusion of vitamins in healthy individuals lacks scientific evidence and can cause adverse reactions and overload target organs⁴⁻⁶.

The trivialization of practices without evidence compromises trust in medicine and the ethical practice of care. The World Health Organization (WHO) and the Federal Council of Medicine (CFM) warn that health advertising must be based on true, transparent, and scientifically grounded information, prohibiting promises of cures and unproven results⁷⁻⁸.

Studies show that most health professionals recognize the risks involved in these practices, such as the absence of prior evaluation, contraindications, and drug interactions, which reinforces the need for strict regula-

tion⁵⁻⁹.

In view of this, this article critically analyzes the intravenous infusion of nutrients in healthy individuals from the perspective of Evidence-Based Medicine (EBM) and medical ethics, addressing risks, bioethical dilemmas, scientific gaps, and legal implications in order to promote safer and more ethical care.

METHOD

This is an integrative literature review, a method that synthesizes the results of primary research and broadens the theoretical and practical understanding of the topic. The search was conducted between August 2024 and July 2025 in the following electronic databases: PubMed, SciELO, LILACS, and Google Scholar, using descriptors in Portuguese and English—*evidence-based medicine, medical ethics, intravenous nutrient infusions, serum therapy, hypervitaminosis, quackery, and intravenous supplementation*—combined by Boolean operators.

Articles published between January 2010 and July 2025, available in Portuguese, English, or Spanish, that addressed clinical, ethical, or scientific aspects of intravenous mineral infusion in individuals without clinical indication were included. Studies with undefined methodology, duplicates, isolated case reports, or those without a direct relationship to medical ethics or EBM were excluded.

Of the 132 studies identified, 45

met the criteria and 22 were included in the final review. The selection was conducted by two independent reviewers, with a consensus decision in cases of disagreement. As it used public data, the study was exempt from ethical review, in accordance with Resolution No. 510/2016.

RESULTS

Serum therapy has become widespread in Brazil, driven by digital marketing and influencers who promote it as a quick solution for immunity, without scientific backing, reinforcing aesthetic standards through promises of results, which constitutes an ethical violation and exposes the public to misinformation³⁻¹⁰.

The Brazilian Association of Nutrology (ABRAN) is opposed to the use of serum therapy without clinical indication, recommending it only in cases of proven nutritional deficiency and warning of health risks¹¹.

Studies show that intravenous nutrient infusions do not offer any greater benefit than oral supplementation in healthy individuals and can cause significant adverse effects such as nausea, headache, hypervitaminosis, phlebitis, and tachycardia; and more serious effects, including renal failure, anaphylactic shock, and even death, in addition to complications resulting from improper handling³⁻⁵.

Health advertising practices must follow strict ethical criteria, as recommended by the World Health Or-

¹ Nota: Embora o termo “soroterapia” não possua definição técnica oficial em documentos regulatórios da Anvisa ou da literatura biomédica internacional, ele tem sido amplamente utilizado no Brasil, de forma popular e midiática, para se referir à prática de infusão endovenosa de nutrientes e vitaminas em indivíduos saudáveis com fins estéticos, energéticos ou imunológicos.

ganization and the Code of Medical Ethics itself⁷⁻¹². The CFM, in its Resolution No. 1,974/2011, reinforces that medical advertising must be characterized by sobriety, clarity, and commitment to scientific truth⁸.

Emblematic cases highlight the risks: in Cuiabá, a pregnant woman died minutes after receiving a "vitamin cocktail"¹³; in Araranguá, an elderly man died during the application of the therapy at a clinic¹⁴. Both episodes were investigated by the authorities and resulted in public statements by the Regional Medical Councils.

The Brazilian Health Regulatory Agency (ANVISA), through GG-MON Alert No. 03/2023, prohibited the injectable use of cosmetics, including substances used in serum therapy, intensifying in 2025 the "Safe Aesthetics" Operation, which fined irregular clinics and professionals¹⁵.

The performance of therapies without scientific support violates the Code of Medical Ethics Resolution No. 2,217/2018¹², constituting recklessness, negligence, or malpractice, in addition to charlatanism and conflict of interest¹²⁻¹⁵. Such conduct compromises the doctor-patient relationship¹² and, associated with the placebo effect, can aggravate suffering¹⁶. Doukas¹⁷ reinforces the need to discuss ethics, conflicts of interest, and advertising in medical training.

The judicialization of health has increased, with injured patients seeking redress, which overloads the justice system and the SUS¹⁸⁻¹⁹. There is still a shortage of longitudinal studies on the recurrent use of serum therapy and its psychological and behavioral effects mediated by marketing³⁻¹⁰.

The application of Strech's REIGN (Relevance, Evidence, Individualization, Guideline-concordance, Normative reflection) model⁹ demonstrates that "aesthetic serum therapy" lacks clinical relevance, scientific evidence, individualization, guideline compliance, and normative reflection^{4,8,12,15,7}.

Table 1 – Application of the REIGN model to the practice of aesthetic serum therapy

Dimension of the REIGN model	Observation in the practice of aesthetic serum therapy	References
R – Clinical relevance	Absent in healthy individuals	(9)
E – Scientific evidence	Weak or nonexistent	(4,8)
I – Individualization	Often generalized without prior testing	(15,12)
G – Compliance with guidelines	Contrary to CFM and Anvisa standards	(8,12)
N – Normative reflection	Violates ethical principles and reinforces the commodification of care	(9,7)

Test: qualitative analysis of the literature.

Acronyms: CFM – Federal Council of Medicine;

WHO – World Health Organization.

DISCUSSION

The expansion of aesthetic serum therapy, motivated by commercial interests, contrasts with the lack of robust clinical evidence to support its prescription in healthy individuals²⁰. The BMJ's Drug and Therapeutics Bulletin confirms that there is no scientific evidence of the benefits of "vitamin drips," highlighting the risks of infections, adverse reactions, and electrolyte imbalance²¹.

Similar results have been described in studies, analyses, and perceptions of health professionals regarding nutrient infusion therapies, in which more than 90% of participants recognized potential health risks and warned of the lack of adequate clinical screening⁵. From an ethical perspective, medical advertising must be based on scientific evidence and clear language, as required by the CFM and the Code of Medical Ethics^{8,12}.

The REIGN model⁹ provides an ethical framework for evaluating clinical conduct, demonstrating that aesthetic serum therapy fails in all dimensions: it lacks relevance, evidence, and individualization; it disregards guidelines; and it raises normative dilemmas^{7,9,12,15}.

The literature also points out that unregulated practices compromise patient safety and public system resources²². This phenomenon can induce a false sense of security and delay the diagnosis of underlying diseases⁶.

The main limitation is the scarcity of

controlled clinical trials, with reviews and case reports predominating. Even so, there is consensus on the lack of benefit and the clinical and ethical risks^{3,5,20,22}.

Given this scenario, it is essential that councils and regulatory bodies work together in oversight and ethical education, reinforcing confidence in evidence-based practices.

CONCLUSION

This integrative review highlights the expansion of intravenous nutrient infusions in healthy individuals, driven by aesthetic appeals and commercial interests, in disagreement with the principles of EBM and medical ethics, in addition to exposing patients to significant risks that compromise the credibility of professional practice.

ANVISA points out the lack of registration and scientific evidence for these formulations, while the WHO recommends that clinical interventions be based on solid evidence, safety, and accessibility. There is also an increase in negative effects on the Unified Health System and the Judiciary.

In medical ethics, corrective and preventive actions aimed at the safety and legitimacy of care are required. It is recommended to: (i) prohibit intravenous infusions for aesthetic purposes in healthy individuals; (ii) require clinical evaluation and prior examinations for any therapeutic indication; (iii) strengthen oversight by professional associations and regulatory agencies; (iv) ensuring ethical and transparent consent forms; and (v) com-

bating the commodification of health and misleading advertising.

Finally, it is reaffirmed that medicine

must remain faithful to science, ethics, and human dignity, based on the principles of autonomy, beneficence, and non-malefi-

cence, which are fundamental pillars for the safety of care and the integrity of the doctor-patient relationship.

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