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REVIEW ARTICLE

Anti-Aging, Amortality and Immortality: The Latest Keywords in Aesthetic Surgery

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Abstract

Aging is a fundamental aspect of life and often associated with illness, incapacitation, decrepitude, and death. Naturally, it is a human tendency to avoid it, or at least, postpone it. Research on anti-aging is taking place at various levels. This ranges from biochemistry, cell biology, and molecular biology which includes research on mitochondrial DNA and oxidative stress, and research on cellular and molecular replacement interventions, to animal studies, and human studies. Their aim is to change the rate of human aging in the days to come. The nutraceuticals industry with its super foods and vitamins, the plastic surgeons with their head to toe anti aging and body contouring surgeries almost everyone is lending a hand to stop aging. However, there are plenty of ethical issues with this research and it is only ethical if we can live longer both physically and mentally and not aim for amortality or immortality. Radically extending life or reversing aging will gradually decrease the number of working hands and increase the number of dependent individuals and perhaps the population. We will then have to evolve newer economic, cultural and political norms because there will be no fresh minds to solve newer problems.

Keywords: Anti aging, Amortality, Ethics of anti aging

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Introduction

With the advancement of technology we humans have the audacity to believe that all problems have a solution and any constraint is a problem waiting to be solved. Technology, we believe, is that magic wand, which will make all problems disappear, even aging and death. We have collapsed time, crushed space and with newer technologies are ensuring that if we can dream it, we can achieve it. The gap between our reach and our grasp is fast closing. Defeating aging and defying mortality will be the ultimate bastion which we hope to conquer one day. Super foods, vitamins, anti-oxidants have flooded our markets with fancy promises and plastic surgeons can do magic to rejuvenate every part of the body from scalp down to the feet. Worn out joints are getting replaced by new ones but the aging brain is still not ready to go on back gear.

Virtual life after death

It may appear weird and even absurd to some but technology has already begun to change how people think about life after death. Technology companies are helping people to manage their digital lives after their demise. Apple, Google and Meta are now offering tools to allow someone you trust to access your online accounts after your death and run it as you had desired. Microsoft has patented a software that can harvest someone's digital data – such as texts, emails and social media posts – and use them to create a chatbot. This chatbot can then respond in ways that sound just like the deceased person. This may seem like science fiction, but let us not forget that limb replantation was in writer René Goscinny and illustrator Albert Uderzo's comic series Asterix And Obelix in 1959 and in just 3 years in 1962 Ronald Malt did the first limb replant! As Artificial Intelligence (AI) continues to improve, it will be far more easier to create the digital versions of people after they die. Conmen are using this trick to commit digital frauds even today! However, plenty of challenges still remain. What if a digital clone says or does something online that the deceased would have never said or done in real life? There are ethical issues, still to be solved.

In South Korea a technology company is trying to ensure that AI that will potentially allow anyone to converse and interact with the dead. This is AI version of planchette and in 2020, a Korean documentary crew in association with VR producers helped a grieving mother to "reunite" with her dead daughter [1].

Amortality and Immortality

The idea of an infinite life span does not mean humans will be immortal. It means they will be "amortal." Immortal beings are immune to death from aging or physical harm, but amortal beings are only immune to the effects of aging and disease. They will still be able to die to catastrophic damage to their bodies. However, the wide availability of amortality, giving individuals seemingly unlimited time to learn and grow and accomplish any goal, contains a hidden danger, best described by Parkinson's Law, which describes that any task will automatically fill the time allotted to it. Thus, unlimited time may cause procrastination on an epic timeline. Near

limitless time may lull some individuals into putting their ambitions off perpetually. They will fall into the trap of thinking tomorrow will always be available. The reality is that accidents would still happen, and the odds are that given enough time, every individual would eventually die with ambitions unfulfilled and accomplishments unachieved.

Research

Society directs technology, and new technology then shapes society. It is a relationship that has existed since ages and has brought about three industrial revolutions, the first with steam engines, the second with electricity and assembly line production and the third with computers and internet. With Autonomous robots, Simulation, Big data and Analytics, Augmented Reality, the Cloud, Cyber security, Additive manufacturing, Internet of things and Artificial Intelligence we are in the midst of the fourth industrial revolution and we have now challenged the concept of aging. Why can't we live longer and healthier is our new research question. In our attempt to answer this we have indulged in human and animal studies in the fields of biochemistry, cell biology, and molecular biology (mitochondrial DNA and oxidative stress and cellular and molecular replacement interventions), research with adipocyte and bone marrow-derived stem cells, to name a few.

The idea of defeating the aging process has moved from speculative science fiction to potential reality. The pharmaceutical industry is helping us with a dazzling variety of creams, serums, lotions, and gels that promise to remove all blemishes of age. The nutraceutical industry is flooding us with superfoods [2], vitamins and minerals galore [3] that assure us everlasting youth. The fitness industry is bombarding us with fitness routines and newer generation gyms are pushing and even punishing our bodies in every new way to stay fit and young. Plastic surgeons are offering a head-to-toe maintenance and rejuvenation programme by both non-surgical and surgical means. Thus whereas peels, botox, fillers, PRP and nanofat [4] are there for the less adventurous, hair transplant [5], browlift [6], blepharoplasty [7], facelift [8], brachyplasty [9], breast lift [10], thighs [11] and buttocks [12] and abdominoplasty are for those more dedicated to the cause of everlasting youth. The joints afflicted by degenerative diseases are being routinely replaced successfully and hair transplant has come as a boon for age-related baldness.

Autologous fat grafting, as practiced by aesthetic surgeons, is not just a biological filler anymore, but rejuvenation offered by the adipocyte-derived stem cells may be the first genuine regenerative surgery. Scientists may soon be able to modify human stem cell lines in the laboratory and create pancreatic cell lines for diabetics and thyroid cell line for hypothyroid patients. Gene therapy or other allied techniques can be used to carry chemotherapy drugs to target cancer cells and be used in composite tissue allotransplantation to overcome the problem of immune rejection. Stem cells could be engineered to express genes that enhance the immune system's ability to attack cancer cells. Scientists might also be able to replace

damaged genes by gene editing technology and even substitute new genes in stem cell lines to treat diseases. Techniques like CRISPR-Cas9 allow us to precisely target and modify specific genes within a cell, and thus correct genetic defects. Plastic surgeons are collaborating with the basic researchers in the field of stem cell research and gene therapy. The choice stares at us - either we control the gene technology today or be prepared to be redesigned by it tomorrow.

Nature is not pleased

Nature is not to be tamed so easily. The number of people suffering from cancer and dementia are on the rise. The latter is surely a sad state where the body has stayed young and fit but the mind has simply refused to accompany in the same youthful way! The desire to conquer mortality actually desperately stems from our fear and vulnerability that our transient existence in this earth evokes. We want to matter well beyond the flickering reality of our brief stay in our bodies. In a way this research on anti-aging and immortality is less of a scientific mission and more of a psychological confession.

Our ancient Hindu scriptures consider creation, preservation, and destruction as an essential cycle and the three assigned Gods, Brahma, Vishnu, and Mahesh ensure that this cycle continues uninterrupted. Every generation brings newer ideas, newer discoveries, and further progress. Imagine a world in which people refuse to die or get old. Radically extending life or reversing aging will gradually decrease the number of working hands and increase the number of dependent individuals. We will then have to evolve newer economic, cultural, and political norms because there will be no fresh minds to solve newer problems.

Ethics

The ethical arguments against anti-aging medicine are plenty [13]:

- inequity: the poor die young by the millions, while the rich refuse to age;
- denying aging's immutability;
- dominating nature, altering and commodifying ourselves;
- overpopulation: carrying capacity concerns and the rights of future people to be born;
- ennui: with no natural deadline, life itself outlives its value;
- ageism: prejudice against the old and the young.

However, there are some compelling reasons to go ahead with anti-aging research:

- beneficence: duties to maintain health and prevent disease and death;
- efficiency: slowing down aging would reduce the rates for all of the most common causes of death in developed societies;
- limited autonomy: freedom to purchase anti-aging medicines that may or may not work, so long as they are not harmful;
- improved quality of life: more active, healthier, and wiser (two propositions supporting this argument - that anti-aging medicine would allow for a longer, more active, healthier, and fuller life

- wisdom comes from experience, and experience can lead to better quality of life.

So, how do we strike a balance? It appears that if our aims are beneficence, efficiency, and stick to drugs with proven track record and lead a better quality life, then only longer life is better life.

Environment

Another factor which we are not considering is the environment. True, birth rates are falling in developed countries but not in developing ones to the same extent. How much will people living extra long and healthy lives consume? Already 100 billion animals are slaughtered for 8 billion humans annually. There are more animals raised for food than in the wild. What about the implications of their energy consumption? Can planet earth even afford healthy human longevity? May be, there will be answers to these questions in the future, but we need to ask these questions today.

The finiteness of life is very special. It brings closure to this journey and without this closure life is incomplete and no meaning. The old can pretend to look young, but looking young and being young are two very different things. Is the stubborn refusal of the old to make way for the new not an extreme form of selfishness? Immortality is terrifying; it is just a scary life sentence within one's body. It takes an extreme amount of narcissism to even believe in this theory and strive for it to succeed. Being trapped in eternity without escape is what I call Ashwathama syndrome. In Mahabharata when the great Kaurav warrior used his celestial weapon to try to kill an unborn Pandava child, Lord Krishna gave him a festering wound and cursed him with immortality [12]. Let us all blaze briefly, splutter and fade away and give this earth to the next generation.

Conclusion

Anti-aging medicine and anti aging research needs a rationale and an ethical framework. It should be funded and regulated carefully with the aim reducing the incidence and prevalence of many diseases thus allowing longer, fuller, healthier, and more meaningful lives. Amortality should be the ultimate goal but the benefits of this research should not be confined only to those who can afford it. But all these extra days on earth will only be enjoyable if the brain stays alert and young.

Authors' contribution

Conception and design of the study – Surajit, Neeta, Neela; Acquisition of data- Surajit, Neela, Neeta, Suraji; Drafting of the article – Kaushik, Neela, Neeta, Surajit; Critical revising – Surajit, Neeta; Final approval- Kaushik, Neela, Neeta, Surajit

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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References

1. https://www.aljazeera.com/news/2020/2/14/mother-reunites-with-dead-daughter-in-virtual-reality
2. https://www.healthline.com/health/food-nutrition/anti-aging-foods
3. https://www.nutritionfact.in/nutrition-facts/nutraceuticals
4. Haney, B. (2023). Facial Rejuvenation/Non-Surgical Procedures. In: Bard, R.L. (eds) Image-Guided Aesthetic Treatments. Springer, Cham. https://doi.org/10.1007/978-3-031-36266-8_6
5. Lizardi, J.J., Treger, D., Braud, S.C. et al. The Most Influential Publications Regarding Hair Transplantation: A Bibliometric Review. Aesth Plast Surg (2024). https://doi.org/10.1007/s00266-024-04049-3
6. Graham, Darrell W et al. "Brow Lift in Facial Rejuvenation: A Systematic Literature Review of Open versus Endoscopic Techniques." Plastic and Reconstructive Surgery 128 (2011): 335e–341e.
7. Naik MN, Honavar SG, Das S, Desai S, Dhepe N. Blepharoplasty: an overview. J Cutan Aesthet Surg. 2009 Jan;2(1):6-11. doi: 10.4103/0974-2077.53092.
8. Kim BJ, Choi JH, Lee Y. Development of Facial Rejuvenation Procedures: Thirty Years of Clinical Experience with Face Lifts. Arch Plast Surg. 2015 Sep;42(5):521-31. doi: 10.5999/aps.2015.42.5.521.
9. Elkhatib H. Posterior Scar Brachioplasty with Fascial Suspension: A Long-term Follow-up of a Modified Technique. Plast Reconstr Surg Glob Open. 2013 Oct 7;1(6):e38. doi: 10.1097/GOX.0b013e3182a71465.
10. Ramanadham SR, Rose Johnson A. Breast Lift with and without Implant: A Synopsis and Primer for the Plastic Surgeon. Plast Reconstr Surg Glob Open. 2020 Oct 28;8(10):e3057. doi: 10.1097/GOX.0000000000003057.
11. Karl Schwaiger, Elisabeth Russe, Klemens Heinrich, Florian Ensat, Gernot Steiner, Gottfried Wechselberger, Michaela Hladik,; Thighplasty: improving aesthetics through revival of the medial, horizontal procedure: A safe and scar-saving option. Journal of Plastic, Reconstructive & Aesthetic Surgery 2018;71(4):585-589.
12. Dai Y, Chen Y, Hu Y, Zhang L. Current Knowledge and Future Perspectives of Buttock Augmentation: A Bibliometric Analysis from 1999 to 2021. Aesthetic Plast Surg. 2023 Jun;47(3):1091-1103. doi: 10.1007/s00266-022-03140-x.
13. Mackey. T: An ethical assessment of Anti Aging Medicine; Journal of Anti-Aging Medicine 2003:3:187-204.
14. https://hinduism.stackexchange.com/questions/14836/why-did-lord-krishna-curse-ashwatthama