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ThinkNeuro Inc.



Neurodegenerative Diseases & Neurosurgery

<u>Unlocking the Neurosurgical Tapestry:</u>

<u>Illuminating Pathways to Combat</u> Neurodegenerative Diseases through Surgical Management

Bibliometric Analysis of Top 100 Cited Literature

Neurodegeneration, Spinal Neurosurgery, Neurosurgical Advancements, Trends in Neurosurgical Interventions

01. Introduction

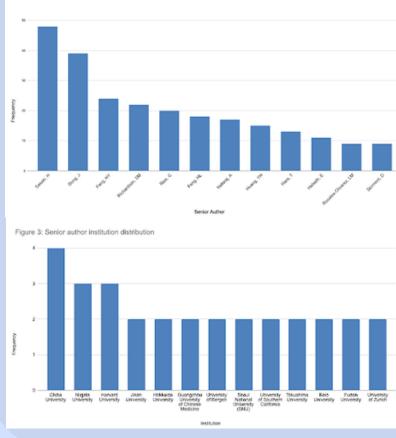
Neurodegenerative diseases, such as Alzheimer's, Parkinson's, Huntington's, and amyotrophic lateral sclerosis (ALS), are growing global health issues that cause progressive neuron degeneration and a range of cognitive, motor, and functional impairments. While medical therapies are crucial in symptom management, neurosurgery emerged as a potential option, ranging from deep brain stimulation (DBS) and neuroadaptive procedures to cell-based therapies and neurorestorative approaches [1, 2]. Over the past four decades, neurosurgery has witnessed endeavors to explore utilizing neurosurgical techniques in addressing dementia, particularly Alzheimer's disease (AD) [3]. In this research poster, we review scientific literature through a bibliometric lens to examine neurodegenerative disease strategies in the evolving landscape of surgical interventions.

<u>Objectives</u>

- Evaluate the potential risks and complications associated with

03. Results & Findings

When sorting the top 100 cited articles, the majority of the articles were published by senior author Hidenao Sasaki, who published 48 papers on neurodegenerative diseases. Chiba University was the top institution attended by 4 senior authors. The Journal of World Neurosurgery had the highest frequency with 19 journal entries, which focused mainly on the topic of "spine". The most cited article from our top 20 articles was a journal on cancer research from senior author, Christian Schichor.



WOS Search

Non-eligible Study

(n=59)

Preliminary Search

Results (n=159)

Eligible Study

(n=100)

Article (n=87)

Review (n=12)

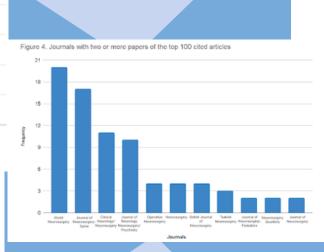
Proceeding Paper

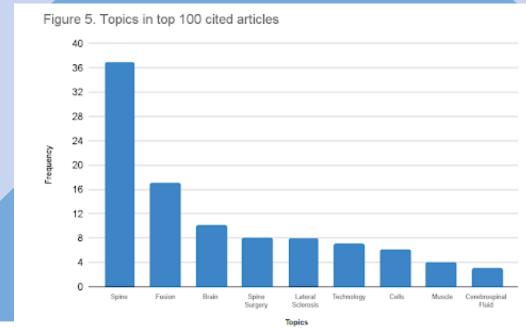
(n=1)

Figure 1.
A diagram outlining the step-by-step process of the literature search, visually

depicting the studies that were discovered

included, and excluded at each stage.





Topics					
		y & Neurodegenerative diseases			
First Author (Tear)	Senter Author	Journal	Title:	Tages	Type of Study
Rostand, SV (2000)	Schiebol, C	CAMCER RESEARCH	Long term Cultures of Barris Martino Derived Harman Melandidyna 20mir Cellir Fringanithy Underland Statements Malagrant Transformation. This article contains errors due in a cross contamination of the cell lines we seed. To correct this asses we published a better in Clarose Rass. 2618 Aug. 5,739.55.0389-61.	Cette	Autospective
Sell MC (2005)	Rios. C	NEUROCHEMICAL RESEARCH	Free supper, lemoidase and 5001 activities, lipid percolation and 100(c) content in the CSF. A different marker profile in four neurodegenerative diseases.	Cerebrospinal fluid	Rekropestive
Schallo, B (2014)	Tensiore, E	JOURNAL OF NEUROSURGERY-SPINE	Safety and accuracy of robot assaded versus. Successpy guided pedicits come insertion for degenerative diseases of the lumber spine: a matched cohort comparison.	Spine	Refraspective
Green, A (2012)	Swatora, 1	JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHISTRY	The split hand syndrome in any ottophic lateral sclerosis	Lateral Subvisio	Refrospective
Super, Z (2016)	Wang, AG	JOURNAL OF NEUROSLINGERY SPINE	Synthetic hone graff versus autograff or allogaelt for spinal fusion, a systematic seview	Fusion	Retropedive
Sakashina, H (2012)	Kelo, F	JOURNAL OF NEUROSLEGERY SPINE	Multivariate analysis of C.5 palsy incidence after servical posterior fusion with instrumentation Clinical article.	Fusion	Rekospeslive
fomanelli, P (2004)	Scorde-Stewart, HM	JOURNAL OF NEUROSURGERY	Microeestrade recording revealing a sonuratopic body map in the suddistance nucleus in humans with Parkinson disease.	Brain	Retrospective
lanai, K (2912)	Kurabara, S	JOURNAL HEUROLOGY NEUROSURGERY AND PSYCHIATRY	Motor axonal excitability properties are strong predictors for survival in anyotrophic lateral sciencels. Frantal lobe white matter hyperintensities and neuroficellars.	Lateral Sclerosia	Prospective
Novikeski, TM (2016)	Kataria, RN	NEUROLOGY	pathology in the oldest old Improving discharge data feletity for use in large administrative	(Inpin	Retrospective
Jologovsky, Y (2014)	Geet, MW	NEUROSURGICAL POCUS	delabores Japanese amy strophic lateral schedup patients with DIGCIDGC	Technology	Propedive
Soneo, T (2013)	Ceodera, D	JOURNAL NEUROLOGY NEUROSURGERY AND PSYCHATEY	Incarnatedate repeat expansion in CROFFT2 Soft hand syndrams in anyotropic lateral schemas: different	Cateral Solerous	Properties
Bibliog R, K (2012)	Kvestora, S	JOURNAL NEUROLOGY NEUROSURGERY AND PSYCHIATRY	excitability changes in the thenor and trypothenar motor axons. Comparison Detween Posterior Lumber interbedy Fusion and	Cateral Schronin	Propedive
Lan, T (2010)	Yang, SJ	WORLD MILEGRANGERY	Transferantinal Lumber Interbody Fusion for the Treatment of Lumbar Depressible Diseases: 3. Systematic Review and Meta Judysis.	Spane	- Impalate
Gelang, J (2001)	Sami, M	AEURO SURGERY	Disturbances of constroughnal fluid flow attributable to arachnoid scanning cause intentifial edema of the call spinal need.	Cerebrospinal fluid	Prespective
telseth, O (2915)	Helseth, E	NEUROSURGERY	Outpartem Cervical and Lumbar Spine Surgery is Feasible and Safe: A Consecutive Single Center Series of 1446 Patients	Spine surgery	Retrospective
figenhihara, M (2012)	Ugews, Y	MUSCLE & NERVE	Fasciculation potentials in amy strophic lateral scienceis and the diagnostic yield of the Awaji algorithm	Lateral Sciennia	Retrospectivo
tenegana, K (2000)	Homme, T	JOURNAL OF NEUROSLEGERO'S PIME	Evaluation of lumber segmental includibly in degenerative diseases by using a new intraspendive measurement system.	Spine	Prospedive
Takahashi, M (2015)	Orine, 5	JOURNAL OF NEUROLOGY NEUROSUBGERY AND PSYCHIATRY	Quantitative correlation between cardiac MBID uptake and remaining axions in the cardiac sympathetic serve is Levy body disease.	Brain.	Refraspective
Marghy, ME (2017)	Bydon, M	JOURNAL OF NEUROSURGERY SPINE	Lumbar decompression in the alterry: increased age as a risk factor for complications and nonhome discharge	Spine	Retrospectivo
ED 3 (2011)	the fire	THE RESIDENCE OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON	Microglist TIR-domain-containing adapter-inducing interferon-bats (TETRIF) deficiency promotes retinal ganglion and support and more researchers for another factor bases to		Prospective

02. Methodology

This bibliometric analysis employed the Web of Science database, spanning its inception to July 1, 2023. A search strategy utilising "neurosurgery" AND "neurodegenerative diseases" without language or publication restrictions was employed. Inclusion criteria entailed literature published from 1994 and onwards, classified as articles, proceedings or review papers, with a minimum of three citations and relevance to the topic, while editorials and letters were excluded. Identified articles were exported to Excel, enabling data extraction of title, authors, abstracts, keywords, citations, and relevant details. Citation counts and coauthorship analysis were conducted in Excel. Data accuracy was verified, adhering to ethical considerations and database terms. Limitations included potential coverage bias and limited generalizability. The analysis can be replicated using the specified search strategy and criteria.

04. Discussion

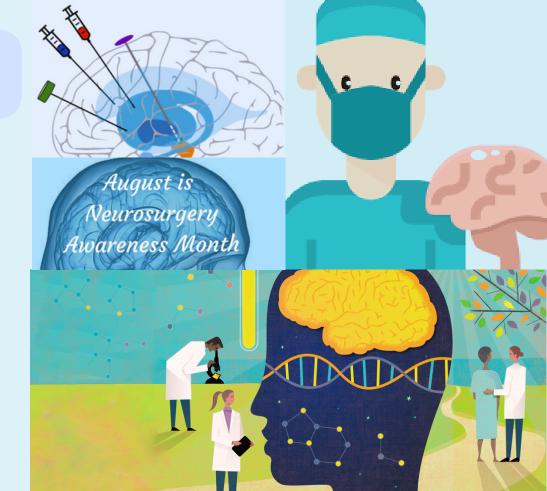
limited generalizability, bibliometric analysis provides a robust and reproducible search strategy that will serve as a valuable resource for future research in this field. Figure 5 shows that the most cited papers in the fields of neurosurgery and neurodegenerative diseases primarily focus on the spine. This finding highlights the importance of spine-related topics and highlights that there is room for expansion in other topics like cells,

muscles, and cerebrospinal fluid. In addition, it reveals

the importance and impact some topics, like the spine,

make in the field of surgical management of neurodegenerative diseases. Some of the strengths of bibliometric analysis are that it can be used to classify large numbers of data as well as organize based on intuition, topic, and citations. However, it can also show weaknesses when trying to determine the standard the data will be analyzed by.

Despite potential limitations such as coverage bias and





While extensive research has been performed on neurosurgery

and neurodegenerative diseases relevant to spines, further investigation is warranted upon neurodegenerative diseases across various facets of the brain, encompassing brain cells, muscles, and brain structures, in order to gain an encompassing understanding of neurodegenerative diseases. Reviewing the top 20 most cited articles on neurosurgery yielded a trend in review and comparison of efficacies of current surgical therapies, including mesenchymal stem cells for cancer cell therapy. Additionally, we noticed a trend in the increased usage of AI and machine learning to improve already existing therapies for neurosurgery.



<u>References</u>

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Linsler, S., Ketter, R., Eichler, H., Schwerdtfeger, K., Steudel, W.-I., & Oertel, J. (2012). Red blood cell transfusion in neurosurgery. Acta Neurochirurgica, 154(7), 1303-1308. https://doi.org/10.1007/s00701-012-

Liu, F., Cao, Y., Feng, Z., Zhou, X., Jiang, C., Li, X., Chen, Z., Li, Z., Liang, Y., Jiang, X., & Dong, J. (2016). Comparison of three different posterior fixation techniques in transforaminal lumbar interbody fusion for twolevel lumbar degenerative diseases: At a mean follow up time of 46 months. Clinical Neurology and Neurosurgery, 141, 1–6. https://doi.org/10.1016/j.clineuro.2015.12.002

