**SUPPLEMENTARY MATERIAL**

**Supplementary Table 1. List of the Top 100 Publications on Chiari Malformations**

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| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
| **Rank** | **Citations** | **Citations Per Year** | **First Author** | **Title** | **Year** | **Journal** |
| 1 | 724 | 32.91 | Milhorat, TH | Chiari I Malformation Redefined: Clinical And Radiographic Findings For 364 Symptomatic Patients | 1999 | NEUROSURGERY |
| 2 | 535 | 19.81 | Oldfield, EH | Pathophysiology Of Syringomyelia Associated With Chiari I Malformation Of The Cerebellar Tonsils - Implications For Diagnosis And Treatment | 1994 | JOURNAL OF NEUROSURGERY |
| 3 | 369 | 15.38 | Nishikawa, M | Pathogenesis Of Chiari Malformation: A Morphometric Study Of The Posterior Cranial Fossa | 1997 | JOURNAL OF NEUROSURGERY |
| 4 | 317 | 14.41 | Heiss, JD | Elucidating The Pathophysiology Of Syringomyelia | 1999 | JOURNAL OF NEUROSURGERY |
| 5 | 307 | 14.62 | Meadows, J | Asymptomatic Chiari Type I Malformations Identified On Magnetic Resonance Imaging | 2000 | JOURNAL OF NEUROSURGERY |
| 6 | 302 | 18.88 | Matsuoka, T | Neural Crest Origins Of The Neck And Shoulder | 2005 | NATURE |
| 7 | 291 | 10.03 | Elster, AD | Chiari-i Malformations - Clinical And Radiologic Reappraisal | 1992 | RADIOLOGY |
| 8 | 277 | 8.66 | Mclone, DG | The Cause Of Chiari-ii Malformation - A Unified Theory | 1989 | PEDIATRIC NEUROSCIENCE |
| 9 | 265 | 6.97 | Paul, KS | Arnold-chiari Malformation - Review Of 71 Cases | 1983 | JOURNAL OF NEUROSURGERY |
| 10 | 256 | 6.4 | Marinpadilla, M | Morphogenesis Of Experimentally Induced Arnold-chiari Malformation | 1981 | JOURNAL OF THE NEUROLOGICAL SCIENCES |
| 11 | 243 | 10.57 | Goel, A | Basilar Invagination: A Study Based On 190 Surgically Treated Patients | 1998 | JOURNAL OF NEUROSURGERY |
| 12 | 243 | 9.35 | Milhorat, TH | Pathological Basis Of Spinal-cord Cavitation In Syringomyelia - Analysis Of 105 Autopsy Cases | 1995 | JOURNAL OF NEUROSURGERY |
| 13 | 233 | 9.71 | Mokri, B | Syndrome Of Orthostatic Headaches And Diffuse Pachymeningeal Gadolinium Enhancement | 1997 | MAYO CLINIC PROCEEDINGS |
| 14 | 202 | 11.22 | Tubbs, RS | Surgical Experience In 130 Pediatric Patients With Chiari I Malformations | 2003 | JOURNAL OF NEUROSURGERY |
| 15 | 195 | 3.05 | Cameron, AH | The Arnold-chiari And Other Neuro-anatomical Malformations Associcated With Spina Bifida | 1957 | JOURNAL OF PATHOLOGY AND BACTERIOLOGY |
| 16 | 193 | 7.42 | Badie, B | Posterior-fossa Volume And Response To Suboccipital Decompression In Patients With Chiari-i Malformation | 1995 | NEUROSURGERY |
| 17 | 180 | 8.57 | Munshi, I | Effects Of Posterior Fossa Decompression With And Without Duraplasty On Chiari Malformation-associated Hydromyelia | 2000 | NEUROSURGERY |
| 18 | 180 | 4 | Saez, RJ | Experience With Arnold-chiari Malformation, 1960 To 1970 | 1976 | JOURNAL OF NEUROSURGERY |
| 19 | 176 | 6.29 | Chumas, PD | Tonsillar Herniation - The Rule Rather Than The Exception After Lumboperitoneal Shunting In The Pediatric Population | 1993 | JOURNAL OF NEUROSURGERY |
| 20 | 176 | 5.87 | Pillay, PK | Symptomatic Chiari Malformation In Adults - A New Classification Based On Magnetic-resonance-imaging With Clinical And Prognostic-significance | 1991 | NEUROSURGERY |
| 21 | 176 | 5.03 | Gilbert, JN | Central-nervous-system Anomalies Associated With Meningomyelocele, Hydrocephalus, And The Arnold-chiari Malformation - Reappraisal O Theories Regarding The Pathogenesis Of Posterior Neural-tube Closure Defects | 1986 | NEUROSURGERY |
| 22 | 173 | 2.44 | Gardner, WJ | The Surgical Treatment Of Arnold-chiari Malformation In Adults - An Explanation Of Its Mechanism And Importance Of Encephalography In Diagnosis | 1950 | JOURNAL OF NEUROSURGERY |
| 23 | 171 | 5.18 | Batzdorf, U | Chiari-i Malformation With Syringomyelia - Evaluation Of Surgical Therapy By Magnetic-resonance Imaging | 1988 | JOURNAL OF NEUROSURGERY |
| 24 | 160 | 16 | Tubbs, SR | Institutional Experience With 500 Cases Of Surgically Treated Pediatric Chiari Malformation Type I Clinical Article | 2011 | JOURNAL OF NEUROSURGERY-PEDIATRICS |
| 25 | 159 | 5.68 | Stovner, LJ | Posterior Cranial Fossa Dimensions In The Chiari-i Malformation - Relation To Pathogenesis And Clinical Presentation | 1993 | NEURORADIOLOGY |
| 26 | 154 | 6.16 | Pascual, J | Cough, Exertional, And Sexual Headaches: An Analysis Of 72 Benign And Symptomatic Cases | 1996 | NEUROLOGY |
| 27 | 152 | 8.44 | Schievink, WI | Misdiagnosis Of Spontaneous Intracranial Hypotension | 2003 | ARCHIVES OF NEUROLOGY |
| 28 | 146 | 8.11 | Strupp, M | Treatment Of Downbeat Nystagmus With 3,4-diaminopyridine - A Placebo-controlled Study | 2003 | NEUROLOGY |
| 29 | 145 | 5.37 | Armonda, RA | Quantitative Cine-mode Magnetic-resonance-imaging Of Chiari-i Malformations - An Analysis Of Cerebrospinal-fluid Dynamics | 1994 | NEUROSURGERY |
| 30 | 145 | 2.27 | Barry, A | Possible Factors In The Development Of The Arnold-chiari Malformation | 1957 | JOURNAL OF NEUROSURGERY |
| 31 | 142 | 10.92 | Durham, SR | Comparison Of Posterior Fossa Decompression With And Without Duraplasty For The Surgical Treatment Of Chiari Malformation Type I In Pediatric Patients: A Meta-analysis | 2008 | JOURNAL OF NEUROSURGERY-PEDIATRICS |
| 32 | 141 | 3.53 | Welch, K | Chiari-i Malformation - An Acquired Disorder | 1981 | JOURNAL OF NEUROSURGERY |
| 33 | 140 | 9.33 | Greitz, D | Unraveling The Riddle Of Syringomyelia | 2006 | NEUROSURGICAL REVIEW |
| 34 | 140 | 2.5 | Peach, B | Arnold-chiari Malformation - Anatomic Features Of 20 Cases | 1965 | ARCHIVES OF NEUROLOGY |
| 35 | 139 | 5.35 | Hida, K | Surgical Indication And Results Of Foramen Magnum Decompression Versus Syringosubarachnoid Shunting For Syringomyelia Associated With Chiari-i Malformation | 1995 | NEUROSURGERY |
| 36 | 138 | 23 | Copp, AJ | Spina Bifida | 2015 | NATURE REVIEWS DISEASE PRIMERS |
| 37 | 138 | 4.76 | Milhorat, TH | Surgical-treatment Of Syringomyelia Based On Magnetic-resonance-imaging Criteria | 1992 | NEUROSURGERY |
| 38 | 134 | 11.17 | Aitken, LA | Chiari Type I Malformation In A Pediatric Population | 2009 | PEDIATRIC NEUROLOGY |
| 39 | 133 | 8.31 | Cinalli, G | Chiari Malformation In Craniosynostosis | 2005 | CHILDS NERVOUS SYSTEM |
| 40 | 132 | 7.76 | Navarro, R | Surgical Results Of Posterior Fossa Decompression For Patients With Chiari I Malformation | 2004 | CHILDS NERVOUS SYSTEM |
| 41 | 128 | 7.11 | Johnson, MP | Fetal Myelomeningocele Repair: Short-term Clinical Outcomes | 2003 | AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY |
| 42 | 125 | 4.63 | Sahuquillo, J | Posterior-fossa Reconstruction - A Surgical Technique For The Treatment Of Chiari-i Malformation And Chiari-i-syringomyelia Complex - Preliminary-results And Magnetic-resonance-imaging Quantitative Assessment Of Hindbrain Migration | 1994 | NEUROSURGERY |
| 43 | 124 | 4.43 | Isu, T | Foramen Magnum Decompression With Removal Of The Outer Layer Of The Dura As Treatment For Syringomyelia Occurring With Chiari-i Malformation | 1993 | NEUROSURGERY |
| 44 | 123 | 7.24 | Schijman, E | International Survey On The Management Of Chiari I Malformation And Syringomyelia | 2004 | CHILDS NERVOUS SYSTEM |
| 45 | 123 | 3.97 | Vega, A | Basichondrocranium Anomalies In Adult Chiari Type-i Malformation - A Morphometric Study | 1990 | JOURNAL OF THE NEUROLOGICAL SCIENCES |
| 46 | 123 | 1.48 | Penfield, W | Arnold-chiari Malformation And Its Operative Treatment | 1938 | ARCHIVES OF NEUROLOGY AND PSYCHIATRY |
| 47 | 122 | 6.78 | Mclone, DG | The Chiari Ii Malformation: Cause And Impact | 2003 | CHILDS NERVOUS SYSTEM |
| 48 | 121 | 9.31 | Novegno, F | The Natural History Of The Chiari Type I Anomaly | 2008 | JOURNAL OF NEUROSURGERY-PEDIATRICS |
| 49 | 120 | 4.8 | Klekamp, J | The Surgical Treatment Of Chiari I Malformation | 1996 | ACTA NEUROCHIRURGICA |
| 50 | 119 | 10.82 | Milhorat, TH | Mechanisms Of Cerebellar Tonsil Herniation In Patients With Chiari Malformations As Guide To Clinical Management | 2010 | ACTA NEUROCHIRURGICA |
| 51 | 117 | 4.5 | Bindal, AK | Chiari-i Malformation - Classification And Management | 1995 | NEUROSURGERY |
| 52 | 113 | 4.19 | Payner, TD | Acquired Chiari Malformations - Incidence, Diagnosis, And Management | 1994 | NEUROSURGERY |
| 53 | 113 | 1.79 | Daniel, PM | Some Observations On The Congenital Deformity Of The Central Nervous System Known As The Arnold-chiari Malformation | 1958 | JOURNAL OF NEUROPATHOLOGY AND EXPERIMENTAL NEUROLOGY |
| 54 | 108 | 2.84 | Park, TS | Experience With Surgical Decompression Of The Arnold-chiari Malformation In Young Infants With Myelomeningocele | 1983 | NEUROSURGERY |
| 55 | 107 | 1.67 | Gardner, WJ | The Varying Expressions Of Embryonal Atresia Of The 4th Ventricle In Adults - Arnold-chiari Malformation, Dandy-walker Syndrome, Arachnoid Cyst Of The Cerebellum, And Syringomyelia | 1957 | JOURNAL OF NEUROSURGERY |
| 56 | 105 | 17.5 | Goel, A | Is Atlantoaxial Instability The Cause Of Chiari Malformation? Outcome Analysis Of 65 Patients Treated By Atlantoaxial Fixation | 2015 | JOURNAL OF NEUROSURGERY-SPINE |
| 57 | 105 | 7.5 | Milhorat, TH | Syndrome Of Occipitoatlantoaxial Hypermobility, Cranial Settling, And Chiari Malformation Type I In Patients With Hereditary Disorders Of Connective Tissue | 2007 | JOURNAL OF NEUROSURGERY-SPINE |
| 58 | 105 | 2.28 | Gardner, E | Dandy-walker And Arnold-chiari Malformations - Clinical, Developmental, And Teratological Considerations | 1975 | ARCHIVES OF NEUROLOGY |
| 59 | 103 | 5.42 | Eule, JM | Chiari I Malformation Associated With Syringomyelia And Scoliosis - A Twenty-year Review Of Surgical And Nonsurgical Treatment In A Pediatric Population | 2002 | SPINE |
| 60 | 103 | 4.68 | Grabb, PA | Ventral Brain Stem Compression In Pediatric And Young Adult Patients With Chiari I Malformations | 1999 | NEUROSURGERY |
| 61 | 102 | 3.4 | Marinpadilla, M | Cephalic Axial Skeletal-neural Dysraphic Disorders - Embryology And Pathology | 1991 | CANADIAN JOURNAL OF NEUROLOGICAL SCIENCES |
| 62 | 101 | 5.05 | Tubbs, RS | Analysis Of The Posterior Fossa In Children With The Chiari 0 Malformation | 2001 | NEUROSURGERY |
| 63 | 101 | 2.24 | Rhoton, AL | Microsurgery Of Arnold-chiari Malformation In Adults With And Without Hydromyelia | 1976 | JOURNAL OF NEUROSURGERY |
| 64 | 100 | 7.14 | Caldarelli, M | The Role Of Limited Posterior Fossa Craniectomy In The Surgical Treatment Of Chiari Malformation Type I: Experience With A Pediatric Series | 2007 | JOURNAL OF NEUROSURGERY |
| 65 | 100 | 4.35 | Guyotat, J | Syringomyelia Associated With Type I Chiari Malformation A 21-year Retrospective Study On 75 Cases Treated By Foramen Magnum Decompression With A Special Emphasis On The Value Of Tonsils Resection | 1998 | ACTA NEUROCHIRURGICA |
| 66 | 99 | 9.9 | Strahle, J | Chiari Malformation Type I And Syrinx In Children Undergoing Magnetic Resonance Imaging Clinical Article | 2011 | JOURNAL OF NEUROSURGERY-PEDIATRICS |
| 67 | 99 | 7.07 | Tubbs, SR | The Pediatric Chiari I Malformation: A Review | 2007 | CHILDS NERVOUS SYSTEM |
| 68 | 99 | 4.71 | Hofmann, E | Phase-contrast Mr Imaging Of The Cervical Csf And Spinal Cord: Volumetric Motion Analysis In Patients With Chiari I Malformation | 2000 | AMERICAN JOURNAL OF NEURORADIOLOGY |
| 69 | 99 | 4.3 | Atkinson, JLD | Acquired Chiari I Malformation Secondary To Spontaneous Spinal Cerebrospinal Fluid Leakage And Chronic Intracranial Hypotension Syndrome In Seven Cases | 1998 | JOURNAL OF NEUROSURGERY |
| 70 | 99 | 2.3 | Holinger, PC | Respiratory Obstruction And Apnea In Infants With Bilateral Abductor Vocal Cord Paralysis, Meningomyelocele, Hydrocephalus, And Arnold-chiari Malformation | 1978 | JOURNAL OF PEDIATRICS |
| 71 | 98 | 4.67 | Haroun, RI | Current Opinions For The Treatment Of Syringomyelia And Chiari Malformations: Survey Of The Pediatric Section Of The American Association Of Neurological Surgeons | 2000 | PEDIATRIC NEUROSURGERY |
| 72 | 98 | 4.67 | Genitori, L | Chiari Type I Anomalies In Children And Adolescents: Minimally Invasive Management In A Series Of 53 Cases | 2000 | CHILDS NERVOUS SYSTEM |
| 73 | 98 | 3.77 | Bhadelia, RA | Cerebrospinal-fluid Flow Wave-forms - Analysis In Patients With Chiari-i Malformation By Means Of Gated Phase-contrast Mr-imaging Velocity-measurements | 1995 | RADIOLOGY |
| 74 | 97 | 4.41 | Krieger, MD | Toward A Simpler Surgical Management Of Chiari I Malformation In A Pediatric Population | 1999 | PEDIATRIC NEUROSURGERY |
| 75 | 97 | 1.83 | Debarros, MC | Basilar Impression And Arnold-chiari Malformation - A Study Of 66 Cases | 1968 | JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY |
| 76 | 96 | 4.36 | Wu, YW | Pediatric Chiari I Malformations - Do Clinical And Radiologic Features Correlate? | 1999 | NEUROLOGY |
| 77 | 95 | 5 | Greenlee, JDW | Chiari I Malformation In The Very Young Child: The Spectrum Of Presentations And Experience In 31 Children Under Age 6 Years | 2002 | PEDIATRICS |
| 78 | 95 | 3.96 | Park, JK | Presentation And Management Of Chiari I Malformation In Children | 1997 | PEDIATRIC NEUROSURGERY |
| 79 | 95 | 3.28 | Pascual, J | Headache In Type-i Chiari Malformation | 1992 | NEUROLOGY |
| 80 | 94 | 2.76 | Bell, WO | Symptomatic Arnold-chiari Malformation - Review Of Experience With 22 Cases | 1987 | JOURNAL OF NEUROSURGERY |
| 81 | 93 | 5.17 | Farmer, DL | In Utero Repair Of Myelomeningocele - Experimental Pathophysiology, Initial Clinical Experience, And Outcomes | 2003 | ARCHIVES OF SURGERY |
| 82 | 91 | 1.63 | Peach, B | Arnold-chiari Malformation - Morphogenesis | 1965 | ARCHIVES OF NEUROLOGY |
| 83 | 90 | 1.91 | Duboulay, G | Mechanism Of Hydromyelia In Chiari Type 1 Malformations | 1974 | BRITISH JOURNAL OF RADIOLOGY |
| 84 | 88 | 9.78 | Klekamp, J | Surgical Treatment Of Chiari I Malformation-analysis Of Intraoperative Findings, Complications, And Outcome For 371 Foramen Magnum Decompressions | 2012 | NEUROSURGERY |
| 85 | 88 | 5.18 | Schijman, E | History, Anatomic Forms, And Pathogenesis Of Chiari I Malformations | 2004 | CHILDS NERVOUS SYSTEM |
| 86 | 87 | 4.83 | Lu, D | Neurological Signs And Results Of Magnetic Resonance Imaging In 40 Cavalier King Charles Spaniels With Chiari Type 1-like Malformations | 2003 | VETERINARY RECORD |
| 87 | 86 | 2.77 | Isu, T | Hydrosyringomyelia Associated With A Chiari-i Malformation In Children And Adolescents | 1990 | NEUROSURGERY |
| 88 | 86 | 2.69 | Dure, LS | Chiari Type-i Malformation In Children | 1989 | JOURNAL OF PEDIATRICS |
| 89 | 85 | 4.72 | Haughton, VM | Peak Systolic And Diastolic Csf Velocity In The Foramen Magnum In Adult Patients With Chiari I Malformations And In Normal Control Participants | 2003 | AMERICAN JOURNAL OF NEURORADIOLOGY |
| 90 | 84 | 5.25 | Aydin, S | Chiari Type I Malformations In Adults: A Morphometric Analysis Of The Posterior Cranial Fossa | 2005 | SURGICAL NEUROLOGY |
| 91 | 84 | 4.94 | Quigley, MF | Cerebrospinal Fluid Flow In Foramen Magnum: Temporal And Spatial Patterns At Mr Imaging In Volunteers And In Patients With Chiari I Malformation | 2004 | RADIOLOGY |
| 92 | 84 | 4.67 | Bouchard, S | Correction Of Hindbrain Herniation And Anatomy Of The Vermis After In Utero Repair Of Myelomeningocele In Sheep | 2003 | JOURNAL OF PEDIATRIC SURGERY |
| 93 | 84 | 1.68 | Sieben, RL | Multiple Cranial Nerve Deficits Associated With Arnold-chiari Malformation | 1971 | NEUROLOGY |
| 94 | 83 | 1.93 | Nyland, H | Size Of Posterior-fossa In Chiari Type-1 Malformation In Adults | 1978 | ACTA NEUROCHIRURGICA |
| 95 | 82 | 5.86 | Bejjani, GK | Safety And Efficacy Of The Porcine Small Intestinal Submucosa Dural Substitute: Results Of A Prospective Multicenter Study And Literature Review | 2007 | JOURNAL OF NEUROSURGERY |
| 96 | 82 | 3.9 | Lewis, DW | The Utility Of Neuroimaging In The Evaluation Of Children With Migraine Or Chronic Daily Headache Who Have Normal Neurological Examinations | 2000 | HEADACHE |
| 97 | 81 | 3.12 | Pujol, J | Motion Of The Cerebellar Tonsils In Chiari Type-i Malformation Studied By Cine Phase-contrast Mri | 1995 | NEUROLOGY |
| 98 | 80 | 5 | Alperin, N | Magnetic Resonance Imaging-based Measurements Of Cerebrospinal Fluid And Blood Flow As Indicators Of Intracranial Compliance In Patients With Chiari Malformation | 2005 | JOURNAL OF NEUROSURGERY |
| 99 | 80 | 4.44 | Milhorat, TH | Tailored Operative Technique For Chiari Type I Malformation Using Intraoperative Color Doppler Ultrasonography | 2003 | NEUROSURGERY |
| 100 | 79 | 6.08 | Trigylidas, T | Posterior Fossa Dimension And Volume Estimates In Pediatric Patients With Chiari I Malformations | 2008 | CHILDS NERVOUS SYSTEM |

**Supplementary Table 2. Study Categories in the Top-100 Publications on Chiari Malformation**

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| --- | --- |
| **Study Category** | **Percentage** |
| Case Report or Series | 35 |
| Retrospective Study | 32 |
| Cohort Study | 14 |
| Editorial | 5 |
| Animal Study | 3 |
| Meta-Analysis | 3 |
| Literature Revew | 2 |
| Survey Research | 2 |
| Epidemiology | 1 |
| Morphometric Data | 1 |
| Prospective Study | 1 |
| Randomized Controlled Trial | 1 |