

## · 基础研究 ·

## 近 30 年突聋研究的文献计量学分析

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【摘要】本文从文献计量的角度揭示近 30 年来突聋研究的热点、现状和趋势。以 Web of Science 核心文集数据库作为检索对象,使用 Microsoft Office Excel 2019 软件分别从突聋研究的国家、机构、期刊的发文量和引用情况,以及研究侧重点等进行统计分析。结果显示,统计范围内突聋研究文献产出稳定上升。大多数文献由美中日韩德等国家及其研究机构发表,并由 Otolaryngology, Neurotology, Acta Otolaryngologica 等期刊收录。出现频率最高关键词的依次为突聋、聋、感音神经性聋、眩晕、耳鸣、预后、突发、地塞米松、MRI、鼓室内注射、内耳、耳蜗、梅尼埃病、类固醇、感音神经性、高压氧疗法、听神经瘤、治疗、糖皮质激素等。研究表明,美中日韩德及其研究机构在突聋研究领域具有绝对优势,中国处于国际领先水平,但学术影响力和国际合作有待提高。鼓室注射类固醇/糖皮质激素、高压氧疗法等治疗措施,眩晕和耳鸣等临床表现,以及预后是突聋研究的热点。

【关键词】突聋;科学文献;文献计量学;Web of Science

【中图分类号】R764

【文献标识码】A

【文章编号】1672-2922(2021)05-806-6

### Bibliometric Analysis of Literatures on Sudden Hearing Loss Published in Past 30 Years

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【Abstract】To understand the progress in sudden hearing loss research over the past 30 years through a bibliometric approach. Methods The literatures were searched in the Web of Science citation database (1990 - 2019). Search results were analyzed in Microsoft Office Excel (2019) concerning number of literatures by countries and institutions, journal distribution and research focuses in recent years. Results Sudden hearing loss related research showed an increasing trend during 1990 - 2019. Otolaryngology & Neurotology and Acta Otolaryngologica were active in publishing in this field. Key words most frequently included in reports on sudden hearing loss include sudden hearing loss, hearing loss, sensorineural hearing loss, vertigo, tinnitus, prognosis, sudden, dexamethasone, magnetic resonance imaging, intratympanic, inner ear, cochlea, Meniere's disease, steroids, sensorineural, hyperbaric oxygen therapy, acoustic neuroma, treatment and corticosteroids. The USA, China, Japan, South Korea, Germany and their institutions were in the leading position in this field. Research on sudden hearing loss in China has been progressing rapidly. Intratympanic steroids, hyperbaric oxygen, vertigo, tinnitus and prognosis were the research focus.

【Key words】Sudden Hearing Loss; Scientific Literature; Bibliometric Analysis; Web of Science

急性特发性感音神经性听力损失<sup>[1]</sup>,也称突发性聋或特发性突聋,简称突聋,是指 72h 内突然发生的、原因不明的感音神经性听力损失,至少在相邻的两个频率听力下降 $\geq 20$ dBHL。突聋是临床常见的耳科疾病,患病率高,对患者生活质量影响很

大,病因和发病机制不明,世界各国的治疗方案尚未统一<sup>[2]</sup>。近年来我国的突聋发病率呈现一定的上升趋势<sup>[1]</sup>,但当前仍缺乏大样本流行病学数据进行支撑,美国的患病率为 5-27/10 万<sup>[3]</sup>,美国每年新增约 6.6 万例。

文献计量学(bibliometrics)是对文献特征进行定量研究的学科<sup>[4]</sup>。我们对近三十年 Web of Science 核心文集数据库上有关突聋的研究文献进行了计量分析研究,以加深对突聋研究现状、热点和

DOI: 10.3969/j.issn.1672-2922.2021.05.014

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趋势的了解, 以期为突聋研究提供启示和参考。

1 资料来源和方法

1.1 资料来源

本研究以 Web of Science 核心文集数据库<sup>[5]</sup>为检索对象, 时间范围是 1990–2019 年, 检索时间为 2020 年 10 月 10 日。影响因子来自 ISI Web of Knowledge 的 Journal Citation Reports Edition 2019<sup>[6]</sup>。

1.2 方法

进入 Web of Science 核心文集数据库基本检索页面, 在主题字段输入 "sudden hearing loss" or "sudden idiopathic sensorineural hearing loss" or "sudden deafness" or "sudden sensorineural hearing loss" or "idiopathic sudden sensorineural hearing loss", 作为关键词进行检索, 在时间跨度字段输入 1990–2019 年。检索结果下载后, 输入到 Microsoft Office Excel 2019 进行数据整理、统计、分析。

2 结果与讨论

2.1 年度分布

近三十年突聋相关文献共 2111 篇, 从 1990 年 0 篇, 1993 年 1 篇, 到 2019 年 192 篇, 总体呈增长态势, 国际上对突聋研究的重视程度、科研投入呈现增加态势。

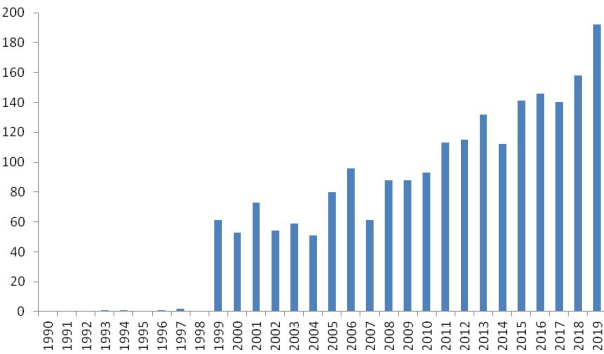


图1 年发文量  
Fig. 1 The amount of literatures per year

2.2 国家和机构分布

美中日韩德等排名前 5 位的国家发文量 1338 篇, 占比 63.38%, 在突聋领域的研究水平和活跃程度较高, 处于绝对领先地位。加拿大和美国的文献以 30.38 次、25.46 次的篇均引用次数居于前列, 在国

表1 发文量前 10 的国家  
Table 1 The Top 10 Countries

Rank	Country	Amount	Percent	Average Citation
1	USA	346	16.39%	25.46
2	China	292	13.83%	9.32
3	Japan	235	11.13%	15.77
4	South Korea	234	11.08%	13.57
5	Germany	231	10.94%	15.49
6	Italy	155	7.34%	15.73
7	Turkey	147	6.96%	8.56
8	UK	75	3.55%	13.81
9	Canada	60	2.84%	30.38
10	France	55	2.61%	16.09

表2 发文量前 10 的机构  
Table 2 The Top 10 Institutions

Rank	Institution	Amount	Percent	Average Citation
1	Nagoya Univ	49	2.32%	25.35
2	Hallym Univ	34	1.61%	7.65
3	Keimyung Univ	34	1.61%	25.94
4	Taiwan Univ Hosp	33	1.56%	13.18
5	Taipei Med Univ	29	1.37%	18.03
6	Seoul Natl Univ	27	1.28%	17.26
7	Harvard Univ	26	1.23%	46.23
8	Univ Munich	26	1.23%	34.85
9	Sungkyunkwan Univ	25	1.18%	22.00
10	Keio Univ	24	1.14%	13.67

际上受到更多的关注,学术影响力较强;中国和土耳其的篇均引用次数较低,学术影响力相对较弱。

2.3 期刊分布

Otology Neurotology、Acta Oto Laryngologica 等排名前 10 位的期刊发文量 884 篇,占比 41.88%,是突聋领域的主要期刊。影响因子,是指一定时间内某刊论文的平均被引率,可用于衡量期刊声望、学术影响或出版物质量<sup>[7,8]</sup>,10 个期刊平均影响因子(1.585),数值偏低,说明突聋主要期刊的学术影响力一般。

2.4 研究热点分析

突聋共涉及 71 个研究方向,主要集中在耳鼻喉科学(1340 篇,63.48%)、神经科学与神经病学(418 篇,19.80%)等。关键词代表了文献的主题和重点,其统计分析可以反映研究趋势和热点<sup>[9]</sup>。统计范围内共 2934 个关键词,出现频率最高的依次为突聋、聋、感音神经性聋、眩晕、耳鸣、预后、突发、地塞米松、MRI、鼓室内注射、内耳、耳蜗、梅尼埃病、类固醇、感音神经性、高压氧疗法、听神经瘤、治疗、糖皮质激素等。

统计数据表明,近 30 年突聋研究热点主要集中在类固醇/糖皮质激素、眩晕、鼓室注射、高压氧疗法、耳鸣、预后等,其中:第一个十年的研究热点主要为类固醇/糖皮质激素、耳鸣、耳蜗、耳蜗血流量、眩晕等;第二个十年的研究热点主要为眩晕、类固醇/糖皮质激素、耳鸣、梅尼埃病、高压氧疗法、内耳等;最近十年的研究热点主要为类固醇/糖皮质激素、鼓室注射、眩晕、高压氧疗法、预后、耳鸣等;这些研究热点的出现次数总体呈增加趋势,最近十年对鼓室注射类固醇/糖皮质激素、高压氧疗法等治疗措施,眩晕和耳鸣等临床表现,以及预后的关注度持续提升。

在突聋的治疗中<sup>[2,3]</sup>,我国的医疗工作者普遍认为突聋患者应立即进行医疗干预,美国 2019 年指

南认为突聋存在一定自愈性,等待观察和医疗干预的利弊不能确定,医生需将利弊告知患者,由医患协商选择治疗方式,糖皮质激素是我国和美国医生医疗干预中普遍使用的药物。关于全身和局部给药,有研究认为<sup>[10,11]</sup>鼓室内注射有效率和痊愈率高,特别是对于全身使用激素有较大风险的患者,而对低频及高频下降型患者静脉给药疗效更好。我国未将高压氧作为首选治疗方案<sup>[1]</sup>,而作为补救性措施,有研究表明<sup>[12-14]</sup>,高压氧联合药物治疗安全有效,其近期疗效优于单纯药物治疗,发病后 14 天内高压氧治疗的效果较好。有研究表明<sup>[15]</sup>,女性不同生理周期与突聋严重程度存在相关性,对不同时期女性应采用不同的治疗方式。突聋患者眩晕或头晕比例约 30%<sup>[1]</sup>,伴眩晕患者存在焦虑、抑郁状况,听力损失严重,前庭功能受累严重,且疗效较差<sup>[16-18]</sup>。突聋患者耳鸣比例约 90%<sup>[1]</sup>,伴耳鸣患者耳鸣疗效与性别、耳别、是否伴眩晕及耳闷等无关,耳鸣症状随听力改善提高而好转<sup>[19,20]</sup>。各频率均未引出的突聋患者多并眩晕,预后较差,需延长治疗时间<sup>[21]</sup>。突聋的预后因素包括性别、年龄、侧别、发病时间、听力损失程度、伴发症、听力损失类型、情绪心理状况、合并基础病、基因等<sup>[22]</sup>,在影响因素相同的情况下,远期疗效优于近期疗效,听力曲线类型、血流变、血脂、年龄为突聋近期与远期相同的预后影响因素,近期疗效与血糖、甘油三酯有关<sup>[23]</sup>,双耳同时突聋患者疗效可能与凝血功能相关<sup>[24]</sup>,其治疗总有效率与总胆固醇、低密度脂蛋白胆固醇负相关<sup>[25]</sup>,纤维蛋白原可以作为全频型突聋的预后预测指标<sup>[26]</sup>,深信度网络对于包含丰富、复杂变量特征的突聋数据能提供强大的预后预测功能<sup>[27]</sup>,1000Hz 阈值>25dBHL 是低频下降型突聋预后的影响因素<sup>[28]</sup>,突聋患者的心理健康情况整体较差<sup>[29]</sup>,针刺治疗可以缓解突聋患者焦虑、抑郁的心理状态<sup>[30]</sup>,采取干预提高老年突发性聋患者情绪管理能力可以

表 3 发文量前 10 的期刊  
Table 3 The Top 10 Journals

Rank	Journal	Amount	Percent	Impact Factor
1	Otology Neurotology	176	8.34%	1.712
2	Acta Oto Laryngologica	141	6.68%	1.157
3	European Archives of Oto Rhino Laryngology	114	5.40%	1.809
4	Laryngoscope	100	4.74%	2.465
5	Journal of Laryngology and Otology	82	3.88%	1.098
6	Otolaryngology Head and Neck Surgery	77	3.65%	2.341
7	Auris Nasus Larynx	51	2.42%	1.436
8	HNO	50	2.37%	1
9	Annals of Otology Rhinology and Laryngology	47	2.23%	1.284
10	Audiology and Neuro Otology	46	2.18%	1.549

Impact Factor: Journal Citation Reports 2019

改善预后<sup>[31]</sup>。

## 2.5 中国研究情况

中国位列第2位,在国际中处于领先地位。发文量前十的机构依次为台湾大学医院(33篇)、台北医学大学(29篇)、阳明大学(22篇)、台湾大学(17篇)、台北荣民总医院(17篇)、中山大学(16篇)、奇美医药中心(15篇)、复旦大学(15篇)等。国际合作在科学研究中作用显著<sup>[32]</sup>,中国发文中46篇文章为国际合作文章,占比15.75%,中国国际合作程度偏低,有待进一步加强。

中国排名前列的关键词依次为突聋、聋、特发性、眩晕、预后、Meta分析、MRI、耳鸣、地塞米松、类固醇、鼓室内注射、突发、中风、孕期等。中国的研究热点主要为眩晕、预后、VEMP、类固醇/糖皮质激素、鼓室注射、Meta分析等,总体与国际研究保持一致,但对VEMP和Meta分析的关注度相对较高。

## 3 结论

综合以上对Web of Science核心数据库上近30年以来突聋相关文献的文献计量学分析,可以看出

表4 出现频率前40名的关键词

Table 4 The Top 40 Key words

Rank	Keywords	1990-2019		1990-1999		2000-2009		2010-2019		China	
		Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency
1	Sudden Sensorineural Hearing Loss	363	17.20%	2	3.03%	70	9.96%	291	21.68%	85	29.11%
2	Sudden Hearing Loss	256	12.13%	8	12.12%	74	10.53%	174	12.97%	18	6.16%
3	Hearing Loss	251	11.89%	3	4.55%	63	8.96%	185	13.79%	20	6.85%
4	Sudden Deafness	145	6.87%	8	12.12%	65	9.25%	72	5.37%	33	11.30%
5	Sensorineural Hearing Loss	120	5.68%	3	4.55%	36	5.12%	81	6.04%	5	1.71%
6	Idiopathic Sudden Sensorineural Hearing Loss	98	4.64%	1	1.52%	17	2.42%	80	5.96%	19	6.51%
7	Vertigo	94	4.45%	2	3.03%	27	3.84%	65	4.84%	19	6.51%
8	Tinnitus	70	3.32%	3	4.55%	20	2.84%	47	3.50%	10	3.42%
9	Prognosis	61	2.89%	1	1.52%	9	1.28%	51	3.80%	15	5.14%
10	Sudden	54	2.56%	0	0	4	0.57%	50	3.73%	8	2.74%
11	Dexamethasone	53	2.51%	0	0	12	1.71%	41	3.06%	9	3.08%
12	Magnetic Resonance Imaging	53	2.51%	1	1.52%	15	2.13%	37	2.76%	10	3.42%
13	Intratympanic	50	2.37%	0	0	10	1.42%	40	2.98%	5	1.71%
14	Inner Ear	49	2.32%	1	1.52%	18	2.56%	30	2.24%	4	1.37%
15	Cochlea	48	2.27%	3	4.55%	12	1.71%	33	2.46%	3	1.03%
16	Meniere's Disease	47	2.23%	1	1.52%	20	2.84%	26	1.94%	4	1.37%
17	Steroids	46	2.18%	0	0	5	0.71%	41	3.06%	3	1.03%
18	Sensorineural	40	1.89%	0	0	12	1.71%	28	2.09%	2	0.68%
19	Deafness	37	1.75%	0	0	12	1.71%	25	1.86%	2	0.68%
20	Hyperbaric Oxygen Therapy	35	1.66%	0	0	3	0.43%	32	2.38%	3	1.03%
21	Steroid	35	1.66%	0	0	7	1.00%	28	2.09%	9	3.08%
22	Acoustic Neuroma	34	1.61%	0	0	16	2.28%	18	1.34%	3	1.03%
23	Treatment	30	1.42%	1	1.52%	11	1.56%	18	1.34%	2	0.68%
24	Corticosteroids	27	1.28%	3	4.55%	8	1.14%	16	1.19%	1	0.34%
25	Hyperbaric Oxygen	26	1.23%	1	1.52%	7	1.00%	18	1.34%	3	1.03%
26	Vestibular Schwannoma	26	1.23%	0	0	8	1.14%	18	1.34%	2	0.68%
27	Stroke	24	1.14%	0	0	6	0.85%	18	1.34%	6	2.05%
28	Cochlear Implant	23	1.09%	0	0	5	0.71%	18	1.34%	0	0
29	Meta-Analysis	22	1.04%	0	0	2	0.28%	20	1.49%	13	4.45%
30	Audiometry	21	0.99%	0	0	6	0.85%	15	1.12%	0	0
31	Hearing Loss, Sudden	20	0.95%	0	0	4	0.57%	16	1.19%	5	1.71%
32	Hearing	20	0.95%	1	1.52%	5	0.71%	14	1.04%	1	0.34%
33	Intratympanic Injection	20	0.95%	0	0	1	0.14%	19	1.42%	8	2.74%
34	Methylprednisolone	19	0.90%	0	0	0	0	19	1.42%	5	1.71%
35	Hyperbaric Oxygenation	18	0.85%	1	1.52%	8	1.14%	9	0.67%	1	0.34%
36	Intratympanic Steroids	17	0.81%	0	0	3	0.43%	14	1.04%	1	0.34%
37	Polymorphism	17	0.81%	0	0	1	0.14%	16	1.19%	5	1.71%
38	Anterior Inferior Cerebellar Artery	16	0.76%	0	0	9	1.28%	7	0.52%	1	0.34%
39	Prednisolone	16	0.76%	1	1.52%	4	0.57%	11	0.82%	1	0.34%
40	Idiopathic	16	0.76%	0	0	3	0.43%	13	0.97%	2	0.68%



随着国际上对突聋关注度的不断提升,国际上突聋研究文献呈现稳定上升态势,并有望在将来保持一定的增长率。

美中日韩德处于本领域研究的领先地位。名古屋大学的发文量大幅领先,哈佛大学、慕尼黑大

学的学术影响力较强。中国科研产出有了大幅提高,处于国际领先水平,但学术影响力和国际合作有待提高。

Otology Neurotology、Acta Oto Laryngologica 等杂志是突聋研究领域最重要的期刊,但学术影响一

表 5 研究热点  
Table 5 The Research Focus

Research Focus	1990-2019		1990-1999		2000-2009		2010-2019		China	
	Number	Frequency	Number	Frequency	Number	Number	Frequency	Number	Frequency	Number
Steroids/Corticosteroids	125	5.92%	3	4.55%	23	3.27%	99	7.38%	14	4.79%
Vertigo	94	4.45%	2	3.03%	27	3.84%	65	4.84%	19	6.51%
Intratympanic/Intratympanic Injection	87	4.12%	0	0.00%	14	1.99%	73	5.44%	14	4.79%
Hyperbaric Oxygen Therapy	79	3.74%	0	0.00%	18	2.56%	59	4.40%	7	2.40%
Tinnitus	70	3.32%	3	4.55%	20	2.84%	47	3.50%	10	3.42%
Prognosis	61	2.89%	1	1.52%	9	1.28%	51	3.80%	15	5.14%
Dexamethasone	53	2.51%	0	0.00%	12	1.71%	41	3.06%	9	3.08%
Magnetic Resonance Imaging	53	2.51%	1	1.52%	15	2.13%	37	2.76%	10	3.42%
Inner Ear	49	2.32%	1	1.52%	18	2.56%	30	2.24%	4	1.37%
Cochlea	48	2.27%	3	4.55%	12	1.71%	33	2.46%	3	1.03%
Meniere'S Disease	47	2.23%	1	1.52%	20	2.84%	26	1.94%	4	1.37%
Acoustic Neuroma	34	1.61%	0	0.00%	16	2.28%	18	1.34%	3	1.03%
Treatment	30	1.42%	1	1.52%	11	1.56%	18	1.34%	2	0.68%
Vestibular Schwannoma	26	1.23%	0	0.00%	8	1.14%	18	1.34%	2	0.68%
Stroke	24	1.14%	0	0.00%	6	0.85%	18	1.34%	6	2.05%
Cochlear Implant	23	1.09%	0	0.00%	5	0.71%	18	1.34%	0	0.00%
Meta-Analysis	22	1.04%	0	0.00%	2	0.28%	20	1.49%	13	4.45%
Audiometry	21	0.99%	0	0.00%	6	0.85%	15	1.12%	0	0.00%
Methylprednisolone	19	0.90%	0	0.00%	0	0.00%	19	1.42%	5	1.71%
Intratympanic Steroids	17	0.81%	0	0.00%	3	0.43%	14	1.04%	1	0.34%
Polymorphism	17	0.81%	0	0.00%	1	0.14%	16	1.19%	5	1.71%
Anterior Inferior Cerebellar Artery	16	0.76%	0	0.00%	9	1.28%	7	0.52%	1	0.34%
Prednisolone	16	0.76%	1	1.52%	4	0.57%	11	0.82%	1	0.34%

般。鼓室注射类固醇/糖皮质激素、高压氧疗法等治疗措施,眩晕和耳鸣等临床表现,以及预后是突聋研究的热点领域。

综上所述,本文通过文献计量的方法,展示了近 30 年来突聋研究的现状、热点和趋势,并将中国情况和国际总体情况进行了对比。这对了解国际上突聋研究情况,指导中国学者开展突聋领域研究,具有一定的指导和借鉴意义。

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