BioTechnology

An Indian Journal

FULL PAPER

The research hotspots analysis of cerebral hemorrhage treatment by PubMed

Zhang Qinting[1], Sun Xiaoman[2], Li Fei[3], Liu Yang[4], Liu Yuhong[4], Jia Zhongjun[4],Zhang Ruijuan[1], Zhang Lifang[1], Liu Tao[1], Ma Guanfeng[4], Li Ruiyu[4], Hou Jinjie[4]*

[1]Hebei Civil Administration General Hospital, Xingtai, 054000, Hebei Province, (CHINA)
[2]XingtaiUniversity, Xingtai, 054000, Hebei Province, (CHINA)
[3]Xingtai Third Hospital, Xingtai, 054000, Hebei Province, (CHINA)
[4]Second Affiliated Hospital, Xingtai Medical College, Xingtai, 054000, Hebei Province, (CHINA)
E-mail: wein871@sohu.com

ABSTRACT

The papers on cerebral hemorrhage in Pubmed were retrieved, and MeSH (Medical Subject Headings) in retrieved papers were analyzed (word frequency analysis, clustering analysis, co-word network graph), it suggested that the current cerebral hemorrhage treatment research hotspots had focus on surgery operation, anticoagulation, thrombolysis, fibrinolytic, etc, it also suggests that the most importance of which was the surgery operation.   © 2013 Trade Science Inc. - INDIA

KEYWORDS

Cerebral hemorrhage;
Treatment;
Word frequency analysis;
Clustering analysis;
Co-word network graph;
Surgery operation.

INTRODUCTION

Cerebral hemorrhage, is a familiar serious cerebral complications of middle-aged and old patients with high blood pressure. Clinical symptom rapidly worsen, and the mortality rate is very high, is currently one of the deadly disease in elderly individuals[1].

Cerebral hemorrhage current research mainly involve cerebral surgery, hemostasis, etc, it has important meanings to the treatment of cerebral hemorrhage. We hope that through this study the analysis of the subject headings can be drawn the outline of cerebral hemorrhage treatment research hot spot.

Therefore this research retrieved the cerebral hemorrhage papers of PubMed (http://www.ncbi.nlm.nih.gov/pubmed), got 26390 papers, and analyzed MeSH of above papers using Co-word Analysis[2].

MATERIALS AND METHODS

First, we retrieved PubMed papers with publication dates between 1966 and 30 April 2013. Second, search terms was "Cerebral Hemorrhage"[Mesh]. Third, using Microsoft Excel we recorded All MeSH terms of above papers, and sort and filter the terms, and looked for the high frequency terms (occurrences), and we also counted occurrences of two high frequency terms together in the same paper, setting up the original co-word matrix. Fourth, the statistical analysis: we made MeSH term's clustering analysis using SPSS13.0 statistical software, draw the co-word network graph of the high frequency terms using Cytoscape software[3].

FULL PAPER

THE MESH TERMS ANALYSIS OF PAPERS ABOUT CEREBRAL HEMORRHAGE TREATMENT

The MeSH terms word frequency analysis

We retrieved 26390 papers, all with MeSH terms, we extracted MeSH terms and established the MeSH terms database. We got 19 MeSH terms of treatment which occurrences frequency was over 180 (including 180). From TABLE 1, we can infered some ideas:the relevant research of cerebral hemorrhage treatment hotspots mainly concentrated in the surgery operation, anticoagulation, thrombolysis, fibrinolytic, etc, it also suggests that surgery operation has become cerebral hemorrhage treatment most major research hotspots.

TABLE 1 : The top 19 MeSH terms about cerebral hemorrhage treatment

Ranking	MeSH terms	Occurrences frequency(times)
1	surgery	4442
2	Postoperative Complications	1140
3	Anticoagulants	732
4	Tissue Plasminogen Activator	610
5	Thrombolytic Therapy	609
6	Fibrinolytic Agents	564
7	Craniotomy	398
8	Neurosurgical Procedures	339
9	Embolization, Therapeutic	311
10	Recombinant Proteins	290
11	Stereotaxic Techniques	276
12	Cerebrospinal Fluid Shunts	267
13	Platelet Aggregation Inhibitors	248
14	Heparin	240
15	Radiosurgery	237
16	Warfarin	227
17	Aspirin	215
18	Antihypertensive Agents	188
19	Neuroprotective Agents	180

Clustering analysis of the high frequency MeSH terms

This research used hierarchical clustering analysis which is one of the most commonly used Classify analysis to analyze the above 19 MeSH terms, drew a dendro-

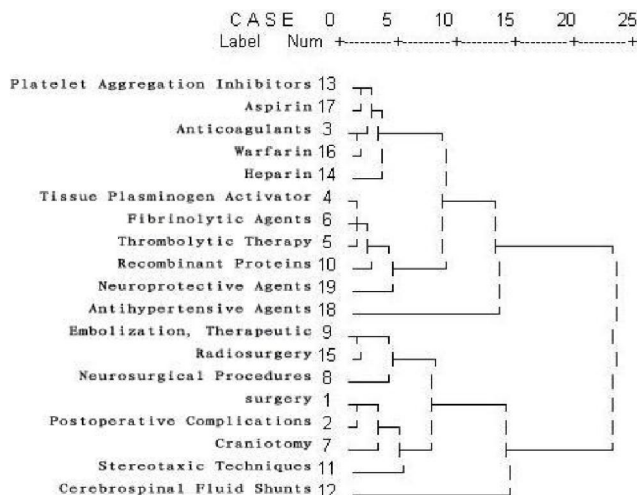gram, and the results were shown in Figure 1.

Figure 1 : Hierarchical clustering analysis dendrogram of MeSH terms

From the Figure 1, in addition to individual MeSH term as "Antihypertensive Agents; Cerebrospinal Fluid Shunts ", we could seen the other high frequency MeSH terms could be divided into the following four groups. Group 1 contains MeSH terms (Platelet Aggregation Inhibitors; Aspirin; Anticoagulants; Warfarin; Heparin), it suggests that Aspirin, anticoagulant, warfarin and heparin were commonly used as platelet aggregation inhibitors. Group 2 contains MeSH terms (Tissue Plasminogen Activator; Fibrinolytic Agents; Thrombolytic Therapy; Recombinant Proteins; Neuroprotective Agents), it suggests that the hematoma as cerebral hemorrhage complication need fibrinolytic drainage hematoma surgery, it need Tissue Plasminogen Activator; Fibrinolytic Agents; Thrombolytic Therapy; Neuroprotective Agents ;Recombinant Proteins[4]. Group 3 contains MeSH terms (Embolization, Therapeutic; Radiosurgery; Neurosurgical Procedures), it suggests that Modern neurosurgery advocated radiotherapy(embolism therapy or interventional treatment[5]). Group 4 contains MeSH terms (surgery; Postoperative Complications; Craniotomy; Stereotaxic Techniques), it suggests that Focuses of surgery craniotomy are stereotaxic technique[6] and treatment of postoperative complications.

The above clustering results suggest that several MeSH terms within one group have certain inherent logic connection between eachother; If there are no known correlation between the MeSH terms, it indi-

FULL PAPER

cates we find a new research hotspot.

Co-word network graph of the high frequency MeSH terms pair

By analyzing MeSH terms of the top 14 (word frequency), we got the top 11 MeSH terms pair (A and B,

see TABLE 2) and co-word network graph of the MeSH terms pair (see Figure 2). Especially the first MeSH terms pair of surgery and Postoperative Complications appeared 986 times in the same paper, it was far higher than that of the second MeSH terms pair (348 times, surgery and Craniotomy).

TABLE 2 : The top 11 MeSH terms pair

Ranking	MeSH terms A	MeSH terms B	Co-word Occurrences frequency(times)
1	surgery	Postoperative Complications	986
2	surgery	Craniotomy	348
3	Tissue Plasminogen Activator	Fibrinolytic Agents	314
4	Tissue Plasminogen Activator	Thrombolytic Therapy	294
5	surgery	Neurosurgical Procedures	284
6	Thrombolytic Therapy	Fibrinolytic Agents	227
7	surgery	Cerebrospinal Fluid Shunts	205
8	surgery	Stereotaxic Techniques	205
9	Tissue Plasminogen Activator	Recombinant Proteins	137
10	surgery	Embolization, Therapeutic	134
11	Postoperative Complications	Craniotomy	101

In Figure 2 the edge represents the concurrence relationship between MeSH terms pair and if the edge between one MeSH term to other MeSH term, it suggests that the one MeSH term is more important, it is in the center of the research hotspots. So we could infer that surgery operation are the research hotspots now.
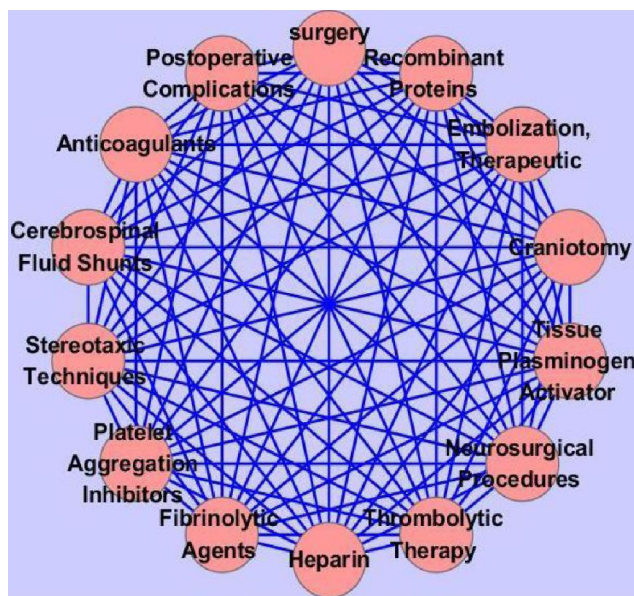

Figure 2 : Co-word network graph of the high frequency MeSH terms pair

CONCLUDING REMARKS

By analyzing MeSH terms (word frequency analysis, clustering analysis, co-word network graph) of PubMed papers about cerebral hemorrhage, we could infer that the current cerebral hemorrhage treatment research hotspots had focus on surgery operation, anticoagulation, thrombolysis, fibrinolytic, etc, it also suggests that the most importance of which was the surgery operation.

REFERENCES

[1] R.Sánchez-Porras, Z.Zheng, E.Santos et al.; The role of spreading depolarization in subarachnoid hemorrhage[J]. Eur J.Neurol., 2013 Mar 29, **(2013)**.

[2] M.I.Viedma-Del-Jesus, P.Perakakis, M.Á.Muñoz et al.; Sketching the first 45 years of the journal Psychophysiology (1964-2008): a co-word-based analysis. Psychophysiology., **48(8)**, 1029-1036 Aug. **(2011)**.

[3] C.T.Lopes, M.Franz, F.Kazi et al; Cytoscape Web: an interactive web-based network browser. Bioinformatics, **26(18)**, 2347-2348 July 23 **(2010)**.

[4] H.Suzuki, M.Shiba, M.Fujimoto et al.;

FULL PAPER ⊂▬▬▬▬▬

Matricellular protein: a new player in cerebral vasospasm following subarachnoid hemorrhage. Acta Neurochir Suppl., **115**, 213-8 **(2013)**.

[5] P.Shrestha, S.Sakamoto, M.Shibukawa et al.; Intracranial aneurysm with systemic lupus erythematosus treated by endovascular intervention. JNMA J Nepal Med Assoc., **49(177)**, 59-61 Jan-Mar **(2010)**.

[6] A.I.Kholiavin, B.V.Martynov, V.A.Fokin et al.; Choice of approach trajectories in stereotaxic surgery in patients with intracerebral tumors. Vestn Khir Im I I Grek., **170(3)**, 7-83 **(2011)**.