



Posterior Fossa Metastasis—Associated Obstructive Hydrocephalus in Adult Patients: Literature Review and Practical Considerations from the Neuro-Oncology Club of the French Society of Neurosurgery

Alexandre Roux¹⁻³, Céline Botella^{1,2,4}, Megan Still^{1,5}, Marc Zanello¹⁻³, Frédéric Dhermain⁶, Philippe Metellus⁷, Johan Pallud¹⁻³

Key words

- Brain metastasis
- Management
- Obstructive hydrocephalus
- Posterior fossa
- Review
- Surgery

Abbreviations and Acronyms

CSF: Cerebrospinal fluid
CT: Computed tomography
GPA: Graded Prognostic Assessment
MRI: Magnetic resonance imaging

From the ¹Department of Neurosurgery, Sainte-Anne Hospital, Paris, France; ²Paris Descartes University, Sorbonne Paris Cité, Paris, France; ³Inserm, U894, IMA-Brain, Centre de Psychiatrie et Neurosciences, Paris, France; ⁴Department of Neurosurgery, Henri-Mondor Hospital, Créteil, France; ⁵University of Texas Southwestern Medical Center, Dallas, Texas, USA; ⁶Department of Radiotherapy, Gustave Roussy University Hospital, Villejuif, France; and ⁷Department of Neurosurgery, Clairval Private Hospital, Ramsay-Générale de Santé, Marseille, France

To whom correspondence should be addressed:

Johan Pallud, M.D., Ph.D.

[E-mail: j.pallud@ch-sainte-anne.fr; johanpallud@hotmail.com]

Citation: *World Neurosurg.* (2018) 117:271-279.

<https://doi.org/10.1016/j.wneu.2018.06.084>

Journal homepage: www.WORLDNEUROSURGERY.org

Available online: www.sciencedirect.com

1878-8750/\$ - see front matter © 2018 Elsevier Inc. All rights reserved.

INTRODUCTION

Brain metastases are the most common form of adult brain neoplasms and occur in 5%–40% of patients with metastatic cancer, with an increasing incidence as a result of improvement in survival for different types of cancer.¹⁻⁸ Posterior fossa metastases represent 15%–25% of the distribution of brain metastases,^{9,10} and estimates suggest that about 8% of patients with posterior fossa metastases develop symptomatic or asymptomatic obstructive hydrocephalus requiring a cerebrospinal fluid (CSF) diversion procedure during the course of their disease.¹¹ To

■ **BACKGROUND:** There is no consensus concerning the management of adult patients with posterior fossa metastasis—associated obstructive hydrocephalus, especially regarding surgical procedures. A literature review was performed to assess the surgical strategy in the management of patients with metastatic brain tumor.

■ **METHODS:** A literature search was conducted of PubMed in November 2017 to identify all studies concerning brain metastases and obstructive hydrocephalus in English. All studies (except case reports and pediatric studies) between December 1953 and November 2017 that were about posterior fossa metastasis—associated obstructive hydrocephalus in adult patients were eligible. Eligible studies were classified by level of evidence. We assessed epidemiology, clinical and imaging findings, neurosurgical management, and prognosis of adult patients with posterior fossa metastasis—associated obstructive hydrocephalus. We suggest some practical considerations and a management decision tree on behalf of the Neuro-oncology Club of the French Society of Neurosurgery, with evidence-based analysis.

■ **RESULTS:** Direct surgical resection could be considered for patients with asymptomatic obstructive hydrocephalus, and endoscopic third ventriculostomy seems to be a reasonable procedure for patients with symptomatic obstructive hydrocephalus. A ventriculoperitoneal or atrial shunt seems to be a valid alternative when patients have a history of central nervous system infection or ventricular hemorrhage, leptomeningeal carcinomatosis, or unfavorable anatomy for an endoscopic third ventriculostomy to be performed.

■ **CONCLUSIONS:** The Neuro-oncology Club of the French Society of Neurosurgery suggests a prospective assessment of these neurosurgical procedures to compare their safety and efficacy.

our knowledge, no consensus exists regarding the optimal management of obstructive hydrocephalus in adult patients with posterior fossa metastases and no prospective assessment has been performed to date. Four neurosurgical procedures are commonly accepted: direct surgical resection of the posterior fossa metastasis, endoscopic third ventriculostomy, ventriculoperitoneal or atrial shunting, and external ventricular drainage.

We performed a literature review that summarizes the epidemiology, clinical

features, diagnostic evaluation, neurosurgical management, and prognostic evaluation for adult patients with posterior fossa metastases who developed symptomatic or asymptomatic obstructive hydrocephalus to provide practical considerations for management of these cases.

METHODS

Search Methodology

A literature search was conducted in the U.S. National Library of Medicine

(PubMed/MEDLINE) in November 2017 to identify independently all studies in English, except case reports and pediatric studies, concerning brain metastases and obstructive hydrocephalus. The inclusive search dates were from December 1953 to November 2017, and specific search terms included “hydrocephalus,” “obstructive hydrocephalus,” “metastasis,” “metastases,” “brain metastasis,” “brain metastases,” “cerebellar metastasis,” “cerebellar metastases,” “posterior fossa metastasis,” and “posterior fossa metastases.” All retrieved titles and abstracts were screened by the first author (A.R.). All full-text publications were reviewed for all potentially eligible studies. The references of the articles were reviewed to supplement our initial search.

Selection Criteria

Publications were eligible to be included in the systematic review if they met the following criteria: 1) full-text articles written in English and 2) studies assessing epidemiology, clinical and imaging findings, neurosurgical management, and/or prognosis of patients with posterior fossa metastasis with or without hydrocephalus. We used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement to strengthen the methodology.¹²

Data Analysis

This study was produced after a national neurosurgical meeting dedicated to brain metastases in adult patients on behalf of the Neuro-Oncology Club of the French Society of Neurosurgery in 2017. During this scientific meeting, the management of posterior fossa metastasis-associated obstructive hydrocephalus was discussed. The study gathered some practical considerations, which were approved by the Neuro-Oncology Club of the French Society of Neurosurgery. We classified them according to the level of evidence (1, 2, and 3–4) and the grade of recommendation (A, B, or C) in accordance with the French National Authority for Health—Haute Autorité de Santé.¹³ The main goal of this scientific meeting was to clarify the management of adult patients with posterior fossa metastases who develop asymptomatic or symptomatic obstructive hydrocephalus.

Table 1. Percentages of Brain Metastases by Type of Primary Cancer

Study, Year	Study Type	Country	Patients (n)	First Topography, n (%)	Second Topography, n (%)	Third Topography, n (%)	Fourth Topography, n (%)	Fifth Topography, n (%)
Kromer et al., 2017 ^{4,*}	Epidemiologic study	United States	25,438	Lung, 22,032 (86.6)	Breast, 1001 (3.9)	Melanoma, 980 (3.8)	Renal, 814 (3.2)	Colorectal, 373 (1.5)
Sunderland et al., 2016 ¹¹	Cohort study	United Kingdom	92	Lung, 38 (41.2)	Breast, 21 (22.8)	Colorectal, 8 (8.7)	Renal, 7 (7.6)	Melanoma, 4 (4.3)
Davis et al., 2012 ¹	Epidemiologic study	United States	69,325	Lung, 41 784 (60.3)	Breast, 10 658 (15.4)	Melanoma, 4119 (5.9)	Renal, 3470 (5.0)	Colorectal, 3359 (4.8)
Zhang et al., 2012 ¹⁹	Systematic review	China	943	Lung, 456 (48.4)	Breast, 156 (16.5)	Renal, 72 (7.6)	Colorectal, 68 (7.2)	Uterus, 4 (4.0)
Fabi et al., 2011 ¹⁵	Multicenter study	Italy	290	Lung, 126 (44)	Breast, 85 (29.5)	Colorectal, 24 (8.5)	Melanoma, 18 (6)	n/a
Stark et al., 2011 ¹⁸	Cohort study	Germany	309	Lung, 154 (49.8)	Breast, 47 (15.2)	Renal, 32 (10.4)	Colorectal, 26 (8.4)	Melanoma, 22 (7.1)
Schouten et al., 2002 ⁷	Cohort study	The Netherlands	208	Lung, 155 (74.5)	Breast, 29 (13.9)	Renal, 9 (4.3)	Melanoma, 8 (3.9)	Colorectal, 7 (3.4)
Lagerwaard et al., 1999 ⁶	Cohort study	The Netherlands	1292	Lung, 724 (56)	Breast, 207 (16)	Renal, 52 (4)	Unknown, 103 (8)	n/a
Counsell et al., 1996 ¹⁴	Epidemiologic study	United Kingdom	214	Lung, 112 (53)	Unknown, 29 (14)	Breast, 27 (13)	Melanoma, 16 (8)	Colorectal, 7 (3)
Nussbaum et al., 1996 ¹⁷	Cohort study	United States	729	Lung, 299 (39)	Breast, 121 (17)	Melanoma, 80 (11)	Renal, 45 (6)	Colorectal, 45 (6)

n/a, not available.

*This study focused on synchronous brain metastases.

Download English Version:

<https://daneshyari.com/en/article/8691278>

Download Persian Version:

<https://daneshyari.com/article/8691278>

[Daneshyari.com](https://daneshyari.com)