The Geriatric Scoring System (GSS) in meningioma patients—validation

Or Cohen-Inbar MD; Gil E. Sviri MD, MSc; Jean F. Soustiel MD; Menashe Zaaroor MD DSc
Rambam Health Care Campus, Technion Institute of Technology Haifa Israel

Introduction

Background and Objectives:

Meningiomas are the most common primary brain tumor, the incidence of which rises with age. The Geriatric Scoring System (GSS) was constructed in an attempt to answer which elderly subpopulation will benefit from a surgical intervention in terms of their overall physical and functional state of health. The GSS incorporates different prognostic indicators, both clinical and radiological, for risk stratification.

The purpose of the study was to validate the previously defined GSS for the evaluation and risk stratification of elderly patients suffering from intracranial meningioma.

Methods

One hundred and twenty patients aged over 65 years admitted to the RAMBAM Medical Center with meningiomas during the years 2005–2010 were characterized, forming an independent cohort. We report the presenting symptoms, chronic illness and radiological features, as well as perioperative and long-term follow -up results up to 5 years after the surgery.

Rambam geriatric scoring system (GSS)

Admission parameter	1 point	2 points	3 points
Size	>5 cm	3~5 cm	<3 cm
Neurological deficit	Progressive	Stable severe	None, minor
KPS	<50	60~80	90~100
Tumor location	Falcine, Parasagittal, foramen magnum	Tentorial, Posterior Fossa Jugular foramen	Convexity, Intraventricular, Transitional, Sphenoid wing, Tuberculum sellae, Cavernous sinus, Optic nerve
Peritumoral edema	Severe	Mild	None
Diabetes mellitus	Not controlled	Medically controlled	None
Hypertension	Not controlled	Medically controlled	None
Pulmonary disease	Severe	Mild	None

Conclusions

The present results suggest that common experience-based considerations may be optimized and implemented into a simple scoring system that in turn may allow for outcome prediction and evidence-based decision making.

Learning Objectives

evidence based aid in decision making

Results

Nine outcome parameters were tested against the GSS score on admission. Survival, Barthel Index, Karnofsky Performance Scale (KPS), consciousness expressed by the Glasgow Coma Scale (GCS) score 5 years after surgery, recurrence within and beyond 12 months of surgery, the length of hospitalization both overall and in a neurosurgical intensive care unit. A GSS score higher than 16 was associated with a significantly more favorable outcome.

Admission parameters data
(Data presented as percent of the cohort)

Sex	35.8 males, 64.2 females	
Blood type	1.7 (A-), 30.8 (A+), 5 (B-), 16 (B+), 0.8 (AB-), 10.9 (AB+), 1.7 (O-), 32.5 (O+)	
Tumor location	49.2 convexity, 20.8 parasagittal, 7.5 falcine, 0.8 olfactory groove, 10 sphenoid wing / clinoidal, 5 tuberculum sellae, 5.8 posterior fossa, 0.8 foramen magnum	
Histology	92.5 typical (grade 1), 6.7 atypical (grade 2), 0.8 anaplastic (grade 3)	
	Grade 1 subtypes	2.4 microcystic, 3.5 angiomatous, 7.1 psammomatous, 47.1 transitional, 11.8 fibrous / fibroblastic, 28.2 meningothelial
Size	13.3 were <3cm, 48.3 were 3~5cm, 34.2 were 5~7cm, 4.2 were >7cm.	
Peritumoral edema	48.3 severe, 37.5 mild, 14.2 none / negligible	
KPS admission	41.7 had a score <50, 43.3 had a score 60~80, 15 had a score >80.	
Neurological deficit	6.7 had no deficit, 20 mild, 41.7 stable severe, 31.7 progressive deficit	
Hypertension (HTN)	20.8 no, 30.8 medically controlled, 25 partially controlled, 23.3 uncontrolled	
Diabetes mellitus	72.5 no, 9.2 medically controlled, 12.5 partially controlled, 5.8 uncontrolled	
Respiratory disease	91.7 no, 5.8 mild chronic, 0.8 severe chronic, 1.7 end stage lung disease	