

Category : **Brain: Neurologic disease**

A149 - Prolonged mechanical ventilation in subarachnoid hemorrhage - the raise score

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Introduction:

Mechanical ventilation (MV) is frequently required for patients suffering from spontaneous subarachnoid hemorrhage (SAH). In a prospective cohort study analyzing retrospectively 297 consecutive non-traumatic SAH patients admitted to the ICU in a tertiary academic medical center, we aimed to identify factors associated with prolonged MV and to create a predictive score for prolonged MV.

Methods:

Using multivariable generalized linear models, we identified factors associated with MV >48 hrs, >7 days, and >14 days. Patients who were mechanically ventilated but died before 48 hours, 7 days or 14 days and those never ventilated were excluded from the analysis. We incorporated those factors into a new prognostic score (the RAISE score: pRolonged ventilAtion In Subarachnoid hEmorrhage patients) to predict prolonged MV >7 days. The Score was developed by arbitrarily choosing 60% SAH patients in a training dataset which was further internally validated.

Results:

The median age of patients was 57 (IQR 47-68) years and median admission Hunt&Hess grade (H&H) was 3 (IQR 1-5). The median duration of MV was 9 (IQR 2-20) days in 242 (82%) patients who required MV. Associations were found between a higher Acute Physiology Score (APS) and MV >48 h, >7 days and >14 days, as well as between a higher H&H and MV >7 days and >14 days. Early neuroimaging findings (hydrocephalus; high-grade SEBES, Subarachnoid Hemorrhage Early Brain Edema Score) were associated with MV >48 hrs. High-grade SEBES and co-occurrence of intraparenchymal bleeding were associated with MV >7 days. Neuroimaging was, however, not associated with MV >14 days. The RAISE score included age, APS, H&H, SEBES, and the presence of ICH stratifying the risk of MV >7 days (See Figure 1).

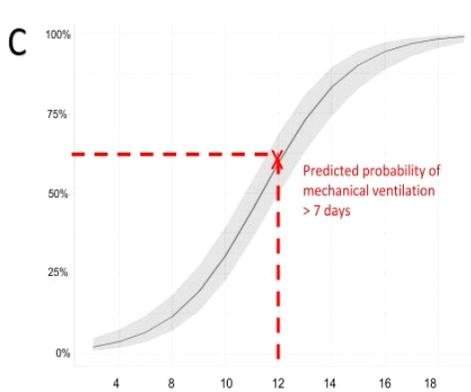
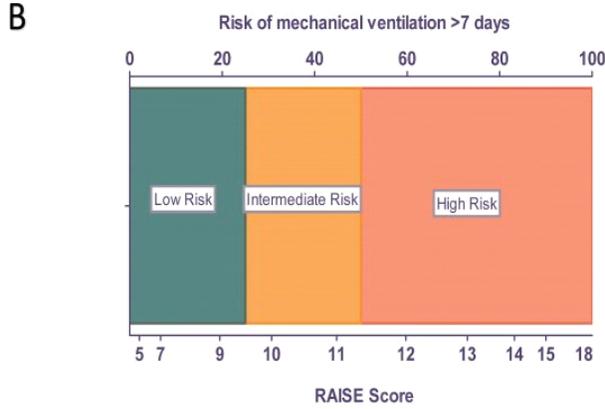
Conclusion:

Disease severity and neuroimaging findings detected within 24h of ICU admission are associated with the need for prolonged MV in patients with SAH. These results may be helpful to better anticipate the course of therapy.

Image :

RAISE Scorecard

A	Points
Baseline Points	11
APS	
<4	-2
4-5	-1
6-13	0
≥14	1
Age	
<61	-1
≥61	1
Hunt & Hess	
0-2	-2
3	0
4-5	3
SEBES	
0	-1
1-2	0
3-4	2
ICH on admission CT	
No	0
Yes	1



Example patient:

Baseline	11
APS = 25 pts	+1
Age = 54 years	-1
Hunt&Hess = 3	0
SEBES = 1	0
<u>ICH on Admission CT</u>	<u>+1</u>
Total	= 12

The scorecard of the RAISE score (pRolonged ventilAtion In Subarachnoid hEmorrhage patients) shows (A) the assignment of points to each patient, (B) risk (%) of MV >7 days at each assigned point sum, and (C) the curve showing the predicted probability of mechanical ventilation >7 days based on assigned points with an example patient. APS - Acute Physiology Score, SEBES - Subarachnoid Hemorrhage Early Brain Edema Score