Contemporary Management of Spinal Dural Arteriovenous Fistulas - Has It Really Been the Onyx Era?

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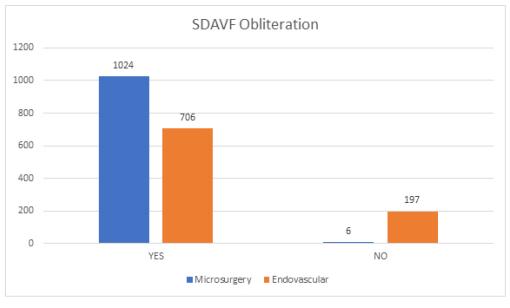
Introduction

Microsurgery has been the historical treatment of choice Spinal Dural Arteriovenous Fistula (sDAVF). Recent endovascular advances have resulted in a transition to an "endovascular-first" approach at some institutions. Ethylene vinyl alcohol (Onyx) has been successfully used for embolization of cranial arteriovenous fistulas (cAVF) and arteriovenous malformations (cAVM), but information about its effectiveness for sDAVF is lacking.

Methods

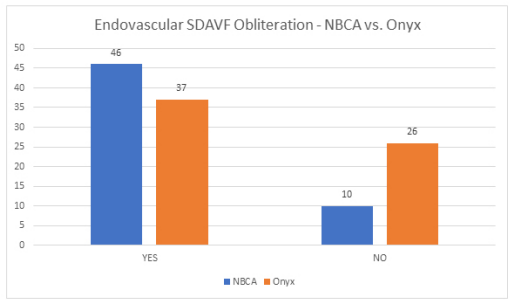
A systematic review of MEDLINE database was conducted, and manuscripts published from 2001-2017 ("Onyx Era") were identified. Pooled analysis was conducted for evaluation of demographic and outcome data. For the Endovascular group, obliteration and recurrence rates were compared for n-butyl cyanoacrylate (nBCA) or Onyx.

Microsurgical versus Endovascular Obliteration of Spinal Dural Arteriovenous Fistulas (SDAVF)



P <0.01 (OR 4.77, CI 3.09-7.35)

Endovascular Obliteration of Spinal Dural Arteriovenous Fistulas (SDAVF), NBCA versus Onyx



P <0.01 (OR 1.4, CI 1.1-1.8)

Results

54 met the inclusion criteria (N=1943 patients). Mean age was 61.4 years, predominantly males (76.6%). Mean symptoms-to-diagnosis time was 17.3 months. At the time of diagnosis, motor symptoms were present in 84.5%, sensory symptoms in 76.6%, and micturition symptoms in 71.2% of the patients. Microsurgery was associated with higher obliteration rate (98.56% vs. 76.61%, P<0.01; OR 4.77). Almost one quarter (23.4%) of the patients initially treated by endovascular means ultimately required microsurgery, most commonly due to lack of initial obliteration. In a subgroup analysis of the endovascular treatment, nBCA was associated with higher obliteration rate than Onyx (P<0.01, OR 1.4). At last follow-up (mean 26.1 months), 72% of the patients had improved, 21% were the same, and 7% deteriorated. Treatment morbidity was low (3.5%). Three deaths were reported (0.2%), none directly associated to the treatment itself.

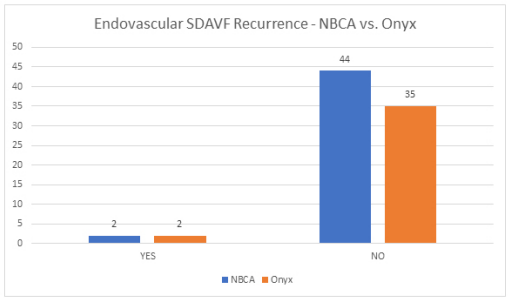
Conclusions

Despite recent advancements in endovascular techniques, microsurgical treatment of SDAVF is still associated with higher obliteration rates. The current literature on endovascular embolization of sDAVF using Onyx remains scarce. Pooled analysis of the data on patients with sDAVF treated with an endovascular approach suggests that NBCA is associated with higher obliteration rates compared to Onyx.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) describe basic epidemiologic factors associated with sDAVF; 2) correctly identify the two independent treatment modalities for sDAVF; 3) discuss the benefits and contraindications for use of microsurgical or endovascular techniques for the treatment of sDAVF; 4) identify the differences in obliteration rates between NBCA and Onyx in the Endovascular management of sDAVF.

Endovascular Recurrence of Spinal Dural Arteriovenous Fistulas (SDAVF), NBCA versus Onyx



P =1.0

References

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