Long term Ophthalmic Outcomes following treatment for Carotid-Cavernous Fistulae in South Wales

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Background

Carotid Cavernous Fistula (CCF) is an uncommon condition involving an abnormal shunt from the carotid artery to the cavernous sinus.

These can be related to trauma or develop spontaneously **(1).** The Ophthalmologist may well be the first pick up CCF (2)

Discussion of long-term ophthalmic sequalae in the literature is particularly sparse.

The symptoms of CCFs are mainly a result of the important neural and vascular structures in the cavernous sinus which involves cranial nerves (CN) III, IV, V1, V2 & VI.

Treatments depend on the type and severity, but trans-arterial or transvenous embolization with detachable balloons, coils, combination of coils, and liquid embolic agents is the first-line treatment of CCFs. Spontaneous closure, compression treatment and surgical intervention are other modalities **(3)**

Aims

Primary Objective

- Observe the aetiologies, triage at presentation, interventional radiological management , ophthalmology management and ophthalmic outcomes
- To describe Long-term Ophthalmic outcomes and consider best management practice.

Secondary Objective

- Perform prospective follow-up with patients to gain insight into their quality of life and the quality of the service provided.

Methods

All patients managed at our institution over the last 12 years February 2011-February 2022 were eligible for inclusion **(n=20). (n=1)** patient with inadequate data was excluded

Retrospective data was identified and collected in tandem via the radiological PACS report system , Welsh Clinical Portal , C&V portal, Open Eyes and physical case notes. **Prospective data** was collected via clinical telephone consultation for (n=13) patients who were accessible and consented.

Data was tabulated & analysed in excel under categories including
● Demographics ●Aetiologies ● Radiological outcomes ● Short-term Ophthalmic outcomes ● Long-term Ophthalmic Outcomes

Results

Figure 1

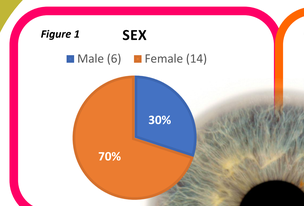


Figure 2

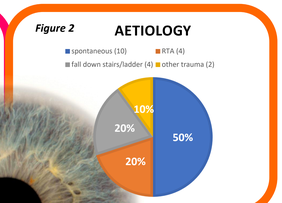


Figure 3

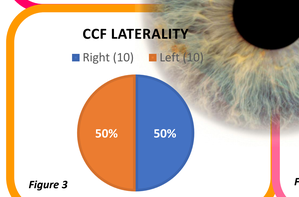


Figure 4

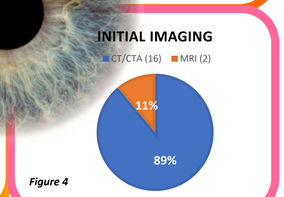
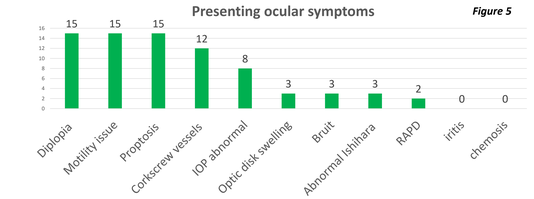


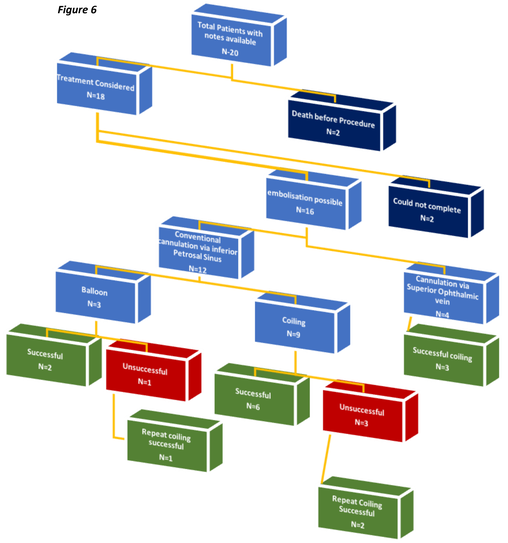
Figure 5



- Initial differential diagnosis was CCF in n=11 cases
- The aetiologies are particularly interesting as they may have an impact on how patients perceive their experience of the condition and manage the ophthalmic sequalae. (figure 2). Those with spontaneous cause may have experienced ophthalmic implications for longer.

Management Pathway

Figure 6

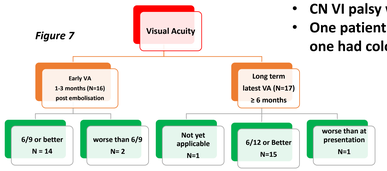


- 88% underwent successful radiological embolization (figure 6)
- For patients who experienced persistent palsy: (n=2) patients were offered occlusion therapy, (n=4) used prisms and (n=2) had right medial rectus Botox injections. Of the (n=3) patients that underwent strabismus surgery, total palsy resolution was achieved in (n=1).
- (n=3) patients with raised IOP were treated medically

Long Term Outcomes

- **76% had follow up of > 12-months**
- **The most common post treatment sequelae was unresolved oculomotor dysfunction (64%)**
  - **CN VI palsy was most common (36%)**
  - **One patient developed a RAPD and one had colour vision loss.**

Figure 7



- **Diplopia** resolved in 57%
- **Proptosis** remained post procedure in all 14 presenting patients Resolved in 36% by 3 months , persisting in 20% at discharge
- **VA** of '6/12' or better achieved in 88% after 6-months **(figure 7)**

Follow-up

- At telephone follow-ups 62% rated 'quality of life' better than pre-treatment despite 7 having persistent symptoms.
- 11/13 patients deemed their overall care "better than satisfactory".
- Patients expressed opinions that their expectations of post treatment symptomatology had been managed and explained well.

conclusions

- **Long-term Ophthalmic data is indicative of treatment success beyond radiological success. An MDT approach is essential for triage and management.**
- **At least 12 months of Ophthalmology follow up should be conducted.**
- **Objectively monitoring patients post discharge is challenging as ophthalmic measurements and refraction are often unavailable.**

References

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