

# Hereditary hemorrhagic teleangiectasia - Argon laser

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## SUMMARY

*In 20 patients with hemorrhagic hereditary teleangiectasias (HHT) only 15 were treatable with argon laser. In the others septal perforation or continued bleeding made initial treatment inadequate. The laser treatment had to be repeated in all patients, due to multiplicity of lesions. Nine patients regarded the outcome very favourably with minimal bleeding episodes. In four of them the effect lasted more than one year.*

## INTRODUCTION

Hereditary hemorrhagic teleangiectasia (HHT) (Osler-Weber-Rendu) is an autosomal dominant bleeding disorder that affects both sexes equally. The diagnosis is based on the hemorrhagic diathesis, the finding of teleangiectasias and the hereditary incidence. Epistaxis is the dominant symptom. Lesions can be found in the skin, intestines, lung, brain and other locations. The nasal teleangiectasias consist of dilated venules located just beneath the basement membrane. They are lined with endothelium without elastic tissue. The lesions appear spiderlike, punctate or nodular (Figure 1). The treatment modalities include oestrogens, radiotherapy, cautery, cryosurgery, microembolization, dermoplasty and amputation (Stoksted et al., 1976; McCaffrey et al., 1977; Stell, 1977).

In the last years cautery has been replaced by laser treatment. CO<sub>2</sub>, YAG, Argon and KTP lasers have been used (Simpson et al., 1983; Lentz and Eichler, 1984; Mehta et al., 1987; Levine, 1989). We would like to report our experiences with the argon laser.

## MATERIAL AND METHODS

From 1986 to 1989 we have treated 20 patients with HHT at the Otolaryngology and Dermatology Departments at Rikshospitalet in Oslo. The nasal mucous

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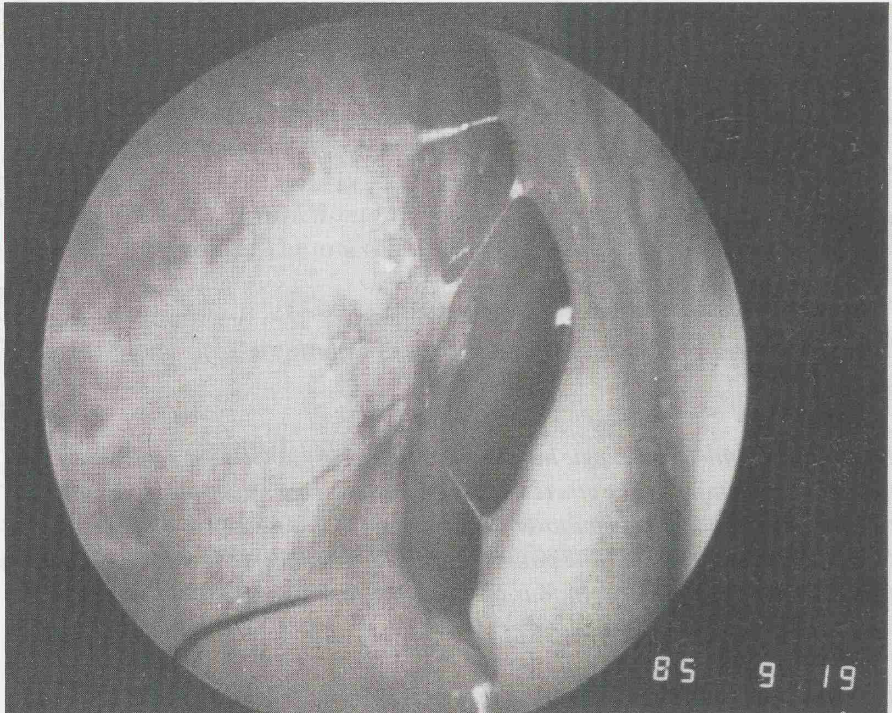


Figure 1. Nodular and spiderlike septal teleangiectasias.

membranes have been anaesthetized with tetracain, and naphazoline has been added for hemostatic reasons. Both sides of the septum were treated at the same setting with the Coherent 920 argon laser in a dermatologic unit. The light given is blue-green with a wavelength of 488 to 514 nm. The beam has a focus of 1 mm at 2 cm. The handpiece is straight as is the beam. We tried different powers and usually ended with 2–2.5 W given in pulses of 0.2 seconds. The minimum observation period after the first treatment is six months.

#### RESULTS

The age and sex distribution of the material is shown in Table 1. Prior treatment is given in Table 2. In all patients the illness had been present in other family members. The lesions usually consisted of a mixture of spiderlike, punctate and nodular, nodular being less frequent. For other manifestations of the disease, number of anemics and important medication taken, see Tables 3 and 4. Patients taking non-steroidal antiinflammatory agents, benefitted from stopping. Septal deviation was found in six patients of whom three were operated. Three patients had septal perforations where the cause of bleeding mostly was related to this

Table 1. Age and sex distribution.

N=20		
age	male	female
≤ 29	0	0
30-39	2	0
40-49	1	4
50-59	3	4
60-69	2	0
≥ 70	2	2
total	10	10

Table 2. Prior treatment.

	no. of patients
electrocautery	18
cryosurgery	1
oestrogens	0
radiotherapy	0
dermoplasty unilat.	2

Table 3. Anemia and medication.

	no. of patients
anemic	6
taking fe <sup>++</sup>	9
taking nsaid	2
taking cyklocapron	1

Table 4. Other manifestations.

	no. of patients
lung	1
kidney	1
gastrointestinal	1

complication. One had to be treated with bilateral dermoplasty, and the other two benefitted markedly from silicon buttons.

When bleeding could not be controlled at the treatment setting, the argon laser was ineffective. Thus only 15 patients could adequately be treated. The results are given in Table 5. Nine patients were treated twice and six three times. In four cases the treatment interval after second treatment has exceeded one year. Lack



Table 5. Effect of argon laser treatment. N=15.

positive		negative	
bilateral	unilateral	bilateral	unilateral
9	2	3	2

positive: 50% or more reduction of incidence of bleeding episodes

negative: less than 50% reduction

of effect was not related to whether or not the patient was anemic. There has been no sequelae in the form of atrophic rhinitis, more crusting or septal perforations. Septal dermoplasty was performed on four patients, due to lack of effect. This was only necessary on one side. In some cases of dermoplasty laser was later given to teleangiectasias along the periphery or on the inferior concha.

#### DISCUSSION

The hereditary nature of the disease was found in all patients. A reflection of this is that several of them were related. Although the lesions are congenital, the patients were all in the older age range. Some of the patients evidently were referred to us due to the availability of the argon laser only at present time. However, the bleeding became troublesome only later in their life time. This bleeding disorder is of a structural nature without a clotting disorder. It is still worthwhile to consider the possibility of this additional aspect which may be iatrogenic. Patients who can stop taking clotting inhibiting medication will have less symptoms as found in our group.

No screening procedure has been performed to search for other locations of the teleangiectasias. So only in three patients do we know of other organs involved. If a dynamic CT scan had been performed, other locations might possibly be found. However, gastrointestinal bleeding, which may account for grave anemias, still would be difficult to locate.

In the treatment of HHT additional nasal factors may play a part. Septal perforation is a source of bleeding in itself. In our three patients the treatment consisted of one case of bilateral dermoplasty and two of silicon button prosthesis, all of which were successful.

The argon laser treatment evidently is a good therapeutic choice. The ideal effect of the argon laser, absorption of the blue-green light in the hemoglobin of vessels could in most cases not be implemented, as the laser light easily ruptured the teleangiectasias and gave rise to continuous bleeding. A coagulation could therefore not take effect. We therefore pretreated all patients with naphazoline. It was not always possible to locate all of the shrunken teleangiectasias. The argon laser was then used as a microcoagulator on the presumed location of angiectasias. A

second treatment caused by renewed bleeding was mostly due to the reappearance of priorly untreated, undetected vessels. Appearance of new teleangiectasias was not often found.

The benefit of the coagulation by the argon laser is that it is small in size and only moderately (1-2 mm) deep. We have not taken advantage of the absorptive capacity to hemoglobin, but rather its medium coagulating and non cutting capabilities. In that way it has been used as a very fine and delicate electrocautery. Its value vs. YAG and KTP lasers which also are very efficient (Kluger et al., 1987; Levine, 1989), cannot be estimated from this study. Parker and Dixon (1985) found the argon superior to the YAG laser. One potential disadvantage of the YAG laser is its deep (6 mm) coagulating capacity. In that way it may be harmful to the septum.

In treating this life long disease it is important to keep in mind that sequelae like septal perforations may be more important than the original disease. Caution as to aggressive treatment is therefore suitable. The argon laser with a small coagulating capacity may not be the perfect solution. However, the danger of sequelae theoretically and so far practically seems to be negligible. We therefore believe that argon laser is preferable as first choice of treatment.

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