International Congress Series 1254 (2003) 447–450

Endoscopic management of subglottic haemangiomas

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Abstract

Objective: In this study, we present our experience in the management of subglottic haemangioma. We compare two different approaches: systemic and intralesional steroids and diode-laser vaporisation. *Patients and methods*: We have studied retrospectively the records of all patients treated for subglottic haemangioma in our department from 1985 to 2000. We observed 23 cases. All patients came under observation for respiratory distress: in 4 cases just stridor and in 19 cases moderate and severe breathing difficulty. A definitive diagnosis required videolaryngotracheoscopy under general anaesthesia. Treatment depended on the degree of airway obstruction. Four patients presenting only inspiratory stridor were treated with oral steroids until the lesion was resolved. Patients with evident respiratory distress have been treated with two alternative approaches. In the first 10 years (11 cases), systemic steroids have been used. We associated intralesional steroids for the largest lesions. In 1995, we started using a contact-diode laser: eight patients have been treated with laser vaporisation under endoscopic view. No patients needed preventive tracheostomy. *Results*: All the cases were followed up for at least 1 year. As to the cases treated with steroids, 4/11 patients needed tracheostomy, while in 3/11 cases we observed severe side effects due to steroids. We obtained a clinical remission of the respiratory distress in all the patients treated with laser vaporisation. Only a patient developed a recurrence in 6 months solved with a second laser session. There were no significant complications. *Conclusions*: Our experience suggests that endoscopic surgery with diode laser is the treatment to be preferred.

Keywords: Subglottic haemangioma; Endoscopic surgery; Diode laser

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0531-5131/
doi:10.1016/S0531-5131(03)01037-9

1. Introduction

Haemangioma is the most common head and neck tumour in infancy, but infantile subglottic haemangioma is rare, accounting for 1.5% of all congenital laryngeal anomalies. These lesions occur more frequently in females, with 2:1 female to male preponderance. It is estimated that approximately 50% of these children also have cutaneous haemangiomas [1]. Histologically, most of them are capillary (91.6%), the others are cavernous or mixed [2]. The haemangioma is usually not present at birth, but grows rapidly during the first year of life. The proliferative phase is followed by slow involution over the next 5–7 years [3]. The increasing growth of the lesion causes intermittent airway obstruction more evident during periods of agitation and cry; the most common symptoms are stridor (usually biphasic but more prominent during inspiration) and respiratory distress [1].

The infantile subglottic haemangioma can be treated in various ways but a standard method has not yet been established. Alternatives are: "wait and see" with or without tracheotomy, systemic and intralesional steroids, CO_2 laser, interferon, open surgical approach and submucous resection [2].

The purpose of this study is to present our experience in the management of subglottic haemangioma. We compare two different approaches: systemic and intralesional steroids and diode-laser vaporisation.

2. Patients and methods

We have studied retrospectively the records of all patients treated for subglottic haemangioma in our department from 1985 to 2000. We observed 23 patients: 16 females and 7 males, with ages ranging from 1 month to 1 year. In 14 cases, the lesion was in the left portion of the subglottic region, while the right side was involved in 5 cases and the posterior in 4. All patients came under observation for respiratory distress: in 4 cases only stridor and in 19 cases moderate and severe breathing difficulty.

In the evaluation of a child with airway obstruction, posteroanterior and lateral neck, and chest x-ray should be carried out first. A definitive diagnosis requires videolaryngotracheoscopy under general anaesthesia. We used rigid optics with a diameter of 2.7 and 4 mm, with direct vision and 30° angle. The endoscopic view of the lesion is sufficiently characteristic to make a diagnosis without resorting to biopsy. Treatment depends on the degree of airway obstruction. Four patients presenting only inspiratory stridor were treated with oral steroids until the lesion was resolved.

Patients with evident respiratory distress have been treated with two alternative approaches. In the first 10 years (11 cases), steroids have been used: a dose of dexamethasone sodium phosphate (1 mg/kg/die) for 7 days (associated to intubation) was followed by a slow decrease of the doses till reaching minimal levels every 48–72 h. We associated intralesional steroids for the largest lesions (airway obstruction larger than 90%).

In 1995, we started using a contact-diode laser for the treatment of these anomalies: eight patients have been treated with laser vaporisation under endoscopic

view. No patients needed preventive tracheostomy (only one had been operated elsewhere).

3. Results

All the cases were followed up for at least 1 year. As to the cases treated with steroids, 4/11 patients needed tracheostomy, while in 3/11 cases we observed severe side effects due to steroids, controlled with a decrease of the doses in two cases and with the suspension in one case (subsequently undergone to a laser session).

We obtained a clinical remission of the respiratory distress in all the patients treated with laser vaporisation. Only one patient developed a recurrence in 6 months, solved with a second laser session. There were no significant complications; in particular, we did not record any uncontrollable bleeding nor subglottic stenosis.

4. Discussion

Treatment of subglottic haemangioma must be tailored to the degree of airway obstruction. The maintenance of a safe airway is the primary goal of therapy. Most haemangiomas resolve spontaneously in the first 5–6 years, making intervention sometimes unnecessary. Certain authors maintain that the treatment should be as conservative as possible, avoiding over-treatments [4]. In our experience, only oral steroids associated to observation may be appropriate for small, minimally symptomatic lesions. In case of evident respiratory distress, a more aggressive treatment is necessary.

Systemic and local steroids are effective on the airway obstruction, but, if given for a long period, may cause serious side effects: growth retardation, Cushing syndrome, immune deficiency [2,5]. This compels to a rigid follow-up and a continuous modification of doses; sometimes an interruption of the therapy is necessary.

Pieces of research about the use of laser (CO_2 and Nd:YAG) described in literature confirm the first experience made by Heavy in the 1980s. Subglottic stenosis is the most frequent complication and the most difficult to treat. It was observed in 18–20% of patients in different works [6–9]. In the past, this complication reduced the indications for laser in the treatment of this pathology.

We used diode laser (810 nm) without recording any subglottic stenosis. We believe several characteristics make diode laser particularly indicated for this pathology. The source is carried on a fibre, and this permits to reach subglottic and tracheal regions better than CO_2 laser. Thanks to its wavelength, the diode laser is absorbed by haemoglobin; a feature of this kind makes the diode laser a perfect surgical tool for the incision of vascularised tissues such as haemangiomas, thus contributing to its excellent haemostatic functions.

As for the tissue damage (particularly the cricoid cartilage), the safety of the diode laser depends strictly on the modality of employment: perichondrial damage, extensive laser applications and repetition of laser sessions must be avoided. Moreover, for the risk of thermic damage to be reduced, the use of medium emission power (5–8 W) is recommended, while keeping exposure times as short as possible.

5. Conclusions

Our experience suggests that endoscopic surgery with laser is the treatment to be preferred. This technique permits to remove the lesion in only one session and often does not require tracheostomy. Therapy with steroids needs a longer period for the resolution of the symptoms and a strict follow-up. For its characteristics, diode laser seems to be the most proper laser source. Both safety of laser and the risk of stenosis are strictly linked to the modality of use of the instrument.

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