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Ultrasonographic Diagnostics of Maxillo-Facial Haemangiomas

Diagnostyka naczynek twarzy metodą USG

Haemangiomas belong to vascular malformations originating as a result of development of pathological capillaries, as well as arterial and venous vessels. Haemangiomas are inborn or develop in later stages of life (1, 9). So far their etiology and pathogenesis have not been finally explained (2). They are characterised by occurrence of convex tumors of various sizes and forms of red and blue-red colouration. They can be found in all parts of human body but with the highest frequency can be encountered on face, nape and scalp (4, 5).

Vascular lesions in maxillo-facial region have been treated by means of cryotherapy in the Clinic of Dental and Maxillo-Facial Surgery of the Academy of Medicine in Lublin since 1969 (1, 7, 8). At first CO₂ was used to achieve low temperatures (2, 3, 8), at present an applicator containing N₂ is used. This applicator enables reaching temperatures down to -190°C. Cryoapplication is based on using low temperatures in order to induce cryonecrosis in pathological tissue (2, 3) followed by scar formation. Depending on the tumor size there are used several cycles of multiple deep freezing of pathological lesions. As a result of the freezing in the first phase necrosis in pathological tissues occurs and then crust and scar are formed. The phase of necrosis and crust formation is dangerous, especially if the haemangioma is supplied in blood by a vessel of considerable dimensions as there is a possibility of spontaneous bleeding or the one induced by tearing off the crust. Possible dangerous complications make indispensable very thorough diagnostics of patients as well as precise verification of cases qualified for cryosurgery. The best method of evaluation of vascular tumor is undoubtedly selective angiography of its vessels as it enables precise identification of localisation and range of vascular lesions as well as determination of

dimensions and number of vessels which supply blood for the tumor. However, angiography is an invasive method, burdening the patient and it is often impossible to carry out, especially in infants.

Ultrasonography used for diagnostics of haemangiomas is a non-invasive method available and at the same time giving a lot of diagnostic information.

MATERIAL AND METHODS

Although cryotherapy of maxillo-facial haemangiomas has been used in the Clinic of Dental and Maxillo-Facial Surgery for 27 years, only in 1994 we introduced ultrasonographic diagnostics of these tumors. Since that time 43 patients with haemangiomas have been examined. Their age ranged from 3 months to 28 years. In most of the cases — 31 persons — patients came in for examination before cryotherapy has been started. 12 patients have been in the course of treatment or after completed cryotherapy. Ultrasonography before cryotherapy allows evaluation of size of haemangioma as well as its internal structure (Fig. 1).

Determination of dimensions of blood vessels supplying the haemangioma is crucial. Detection of a supplying blood vessel of diameter over 3 mm forces changes in planned treatment. Cryotherapy can be used only after closing of this large blood vessel by means of embolisation or surgery. Among the studied patients in 6 cases we found supplying blood vessels of diameter over 3 mm (Fig. 2). In 5 cases cryotherapy was postponed. However, in one case cryoapplication was performed. The case qualified for cryosurgery was of an adult which facilitated this decision due to decreased risk of accidental tearing off the crust. Ultrasonography is also useful for evaluation of results of treatment after first series of cryoapplications as well as for detection of relapse after treatment (Fig. 3). In both cases ultrasonographic scans are similar and medical history of patient is decisive for diagnosis. Follow-up examination after finished cryotherapy enables detection of scar (Fig. 4). Determination of scar presence as well as exclusion of vascular lesions after completed treatment is very often of great importance due to planned correction of scars and deformations by the plastic surgeon.

Conclusions

1. Ultrasonography is a simple and non-invasive method which can be used in children.
2. It has proved its efficiency in diagnostics of maxillo-facial haemangiomas.
3. It enables one-time evaluation of multifocal lesions.
4. It also enables qualification of patients for cryosurgery.
5. It gives the possibility of monitoring of the course of treatment.
6. Relapse can be easily found by means of ultrasonography.
7. It facilitates arriving at decision of ending the treatment.

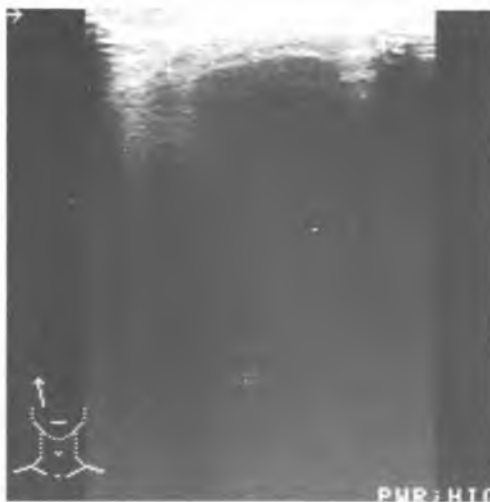


Fig. 1. Scan of haemangioma of right temple region. Hypoechoogenic region of dimensions of 42×42 mm and of 6 mm thickness

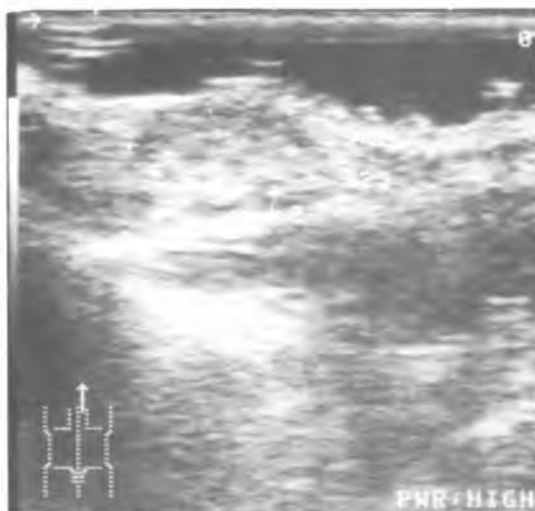


Fig. 2. Vascular lesion localised on nape. Region of heterogenically decreased echogenity of dimensions of 37×25 mm and of 15 mm thickness with visible two blood vessels of diameter of 2 and 3 mm in the haemangioma



Fig. 3. Relapse after 3 years since completed treatment. Hypochogenic region is a vascular tumor

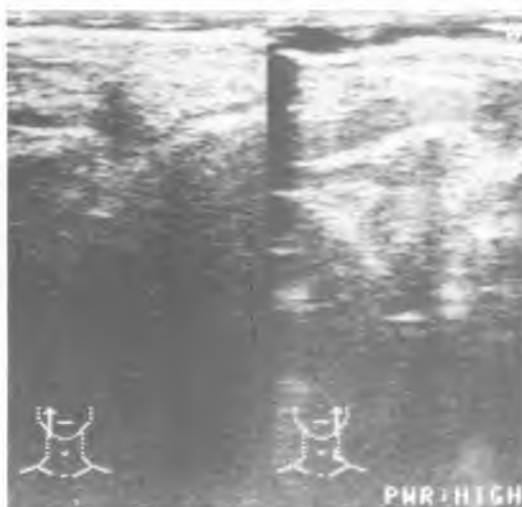


Fig. 4. State after completed treatment of haemangioma of the right cheek. Disturbance of layer structure of cheek tissues within the scar

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STRESZCZENIE

Kwalifikacja pacjentów do leczenia kriochirurgicznego wymaga precyzyjnej diagnostyki zmian patologicznych, a zwłaszcza wielkości i liczby naczyń doprowadzających krew do guza. Takie wymogi spełnia angiografia selektywna oraz ultrasonografia. Angiografia jest wprawdzie metodą precyzyjną, ale skomplikowaną i obciążającą pacjenta. W Klinice Chirurgii Szczękowo-Twarzowej AM w Lublinie diagnostykę naczynek twarzy i okolic przyległych metodą USG rozpoczęto w r. 1994. W tym okresie przebadano 43 chorych z naczynekami. Byli to chorzy w wieku od 3 miesięcy do 28 lat.

Badanie USG umożliwiło ocenę wielkości naczynek, obecność zmian echogeniczności tkanek w obrębie guza, jak również ustalenie wielkości naczyń doprowadzających krew do tkanek objętych procesem patologicznym. Zwłaszcza ta informacja ma duże znaczenie diagnostyczne, gdyż wykrycie naczyń doprowadzającego o średnicy większej niż 3 mm w zasadzie dyskwalifikuje leczenie kriochirurgiczne. Badanie USG umożliwiło również ocenę efektów leczenia oraz wykrycie wznowy po leczeniu. Stwierdzenie blizn i wykluczenie obecności zmian naczyniowych po ukończonym leczeniu było ważne ze względu na planowane zabiegi chirurgiczne korygujące blizny i zniekształcenia po krioterapii.

