# HYGROMA CYSTICUM COLLI

ITS STRUCTURE AND ETIOLOGY.

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SCATTERED through the books on surgery and pathology one may find pictures of children with enormous swellings of the neck which are described as hygromas. Although there are a few definite descriptions the statements about these growths are often indefinite, sometimes contradictory, and give evidence of having been copied from one author by another without the opportunity of extensive personal observation. At least three types of growth have been included in some of the descriptions.

1. Cystic tumors which have endothelial linings and serous contents and which grow with much power through the tissues of the neck or downward under the clavicle into the axilla or pectoral region.

2. Lymphangiomas.

3. Branchial cysts.

The term hydroma should be confined to the former class. They are usually described as cysts of lymphatic origin. The loculi are sometimes described as dilated lymph spaces.

The dividing line between them and lymphangiomas may not always be absolutely definite but the typical examples of each are distinct.

Since branchial cysts are now well understood one hardly sees how they need be confounded with hygromas.

The etiology of hygromas is usually referred to as unknown, although several theories for their origin have been given.

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These growths are rare, the total number described in surgical literature is small. Conversation with friends who would have been likely to see them indicates that they are very uncommon.

Rare cases however come in groups, and after having done neck surgery for many years without seeing a single case the writer has within the last year operated on three undoubted cases and a fourth which was probably such a case but in which inflammation had obliterated the finer structure of the cyst wall.

Most of the peculiarities which have been described in the reported cases have been present in one or more of those cases and their histories are here given in detail. The first one, a child of two and three-quarter years, gave the following history.

CASE I.—J. K., age two and three-quarter years. Admitted August 22, 1912. Died Sept. 30, 1912. Nationality, U. S. (Russian). Roosevelt Hospital, History No. B3034.

*Chief Complaint.*—Swelling of right neck and shoulder.

*Present Illness.*—When patient was three months old the mother first noticed a small swelling, the size of the tip of the little finger, just above the middle of the clavicle on the right side of the neck. The skin over it was normal, it was not painful or tender and could be made to disappear by firm pressure downward. The lump has been gradually growing larger in spite of firm bandages, which used to make it disappear but no longer do so. Following whooping-cough last winter it grew rapidly larger. Four days before admission patient had a fall, striking the lump, since which time it has been somewhat reddened and slightly tender. Otherwise a healthy normal child. Bowels regular, appetite rather poor.

*Past History.*—Has had whooping-cough, pneumonia twice, had "yellow jaundice" one year ago. Is rather subject to coughs. Had a similar lump egg-sized in right axilla, with some symptoms of reducibility, removed at a dispensary last year.

*Family History.*—No history of tumors or fistulæ about the neck. No "lung trouble" in family.

*Physical Examination.*—Patient is a well-nourished, healthy looking girl baby, appears restless but not ill.

Local Condition: On the right side of the neck is a globular swelling about 4 inches in diameter extending from the acromion to the anterior border of the sternomastoid and from the spine of the scapula to well in front of the clavicle. The skin over it is smooth but somewhat ecchymotic as from a contusion. On palpation it is soft, fluctuating and can be somewhat reduced in size by firm pressure. It is apparently not tender. On forced expiration there is an expansile impulse, percussion flat.

Eyes, Ears, Nose, and Throat: Negative.

Skin: Reddish maculopapular eruptions on chest and back.

Chest: There is marked inspiratory retraction of lower ribs in front on both sides, sternum very prominent.

Lungs: Clear.

Heart: Not enlarged. Sounds of good quality. There is a rough systolic murmur heard over the left half of base, transmitted upward toward both clavicles.

Abdomen: Rather a pot-belly with an umbilical hernia. Liver and spleen not felt.

Extremities and Genitals: Apparently normal.

*Operation* (August 23, 1912).—A transverse incision was made above the clavicle and parallel to it. The cyst was enucleated through this incision as far as the pedicle which came just in front of insertion of sternocleidomastoid muscle at the inner edge of sternum. When the cyst was opened it was found that it ran in under the sternum into the thoracic cavity but extrapleurally. It was shaped like an hour-glass and the constricted portion was large enough to admit the finger, the inner dilated portion seemed to have a content of 3–4 oz. and went up as far as thyroid and downward under the sternum for about 2 inches, outward under the clavicle for an inch or more. As much of this lining membrane as could be dissected away was drawn out into the wound and cut off. No attempt was made to lay open this entire inner dilated portion, the condition of child would not warrant so extensive a procedure. Wound closed without drainage. Time of operation 45 minutes.

The recovery from the operation itself was prompt and satisfactory, but the swelling quickly recurred and on September 17, a second operation was done.

*Second Operation* (September 17, 1912).—Anæsthetic, ether. A transverse incision was made from inner end of clavicle well back to posterior portion of neck. The skin and superficial fascia were dissected up and the cyst found to have reformed in the position where it previously existed. The prolongation which extended down under the sternum could not be found. The cyst was 3 x 4 inches long and 2 inches wide. It presented the same characteristics as the one previously removed. It was dissected out in its anterior and lower and upper portions and was found to have a pedicle which extended inward and backward and posterior to one of the scaleni muscles. After careful dissection this pedicle was divided but it frayed out and there was no evidence of an opening which extended further. The cyst contained clear serous fluid; there was considerable fatty tissue on its outer side, also some lymphatic tissue. The wall was thin and similar to one previously removed. There was no evidence of epithelium or communication with the deeper structures.

The child showed considerable reaction after the second operation. There was free serous discharge, on the seventh day there was hemorrhage from the wound, some oozing on the following day and on the tenth day she died.

*Pathologist's Report* (R. H. Pat. No. B-506).—J. K., August 23, 1912.

Specimen: Cyst wall.

Gross Examination: Specimen consists of a thin-walled smooth cyst, with an opening about 2 cm. in diameter at one end. Some areas are red in color, others thin and upon holding to light are translucent. A small thin-walled cyst containing a few drops of serous fluid was found within the cyst wall.

Microscopic Examination: Section shows a thick-walled cyst which is involved in a chronic inflammatory reaction. There is an increase in fibrous connective tissue especially around the blood-vessels which are numerous. Areolar tissue is present in the outer portions in which there are scattered aggregations of lymphoid follicles. No definite type of cell can be made out lining the cyst though in some places they have the appearance of much flattened endothelial cells. This innner part of the wall shows a marked infiltration of round cells.

Diagnosis: Chronic inflammation of cyst wall.

Pathologist, Baldwin Mann, M.D.

*Pathologist's Report,* second specimen. (R. H. No. B-786).—J. K., age two and three quarter years, Sept. 17, 1912.

Specimen: Cyst.

Gross Examination: Specimen consists of a mass of fibrous and fatty tissue containing a few lymph nodes, and a small smooth lining of a cyst.

Microscopic Examination: Section is composed of muscle and connective tissue, containing numerous rather congested blood-vessels, considerable fat and a few nerves. Round cell infiltration is present throughout. There is a definite cyst lined by a single or double layer of rather large cells with elongated nuclei. Lymph node shows moderate hyperplasia.

Diagnosis: Cyst wall showing chronic inflammation. Moderate hyperplasia of lymph node.

Pathologist, Mortimer Warren, M.D.

CASE II.—J. A., age twenty months. St. Mary's Free Hospital for Children. History No. S. 10979. January 18, 1913. Sent by Dr. John McBarron. Ever since birth the mother had noticed what she called a "bubble" just beneath the left clavicle. This apparently diminished on pressure and the mother had not noticed any apparent change in it until two weeks or so ago. Then decided enlargement appeared over the upper left side of the chest in front. The child was sent to the hospital and found to have a very prominent cystic tumor in this locality. Just beneath the clavicle the cyst seemed thin walled, further down it had apparently thicker walls. It extended from the sternum to the outer edge of the pectoralis major and from the sixth rib to the clavicle.

The child's parents were first cousins and the entire family of six children had been defective in some way. This one seems idiotic. It was impossible to keep him quiet long enough to get a good picture of him and finally the picture had to be taken while he was under an anæsthetic.

*Operation* (January 21).—A curved incision with its convexity outward was made from above the clavicle to the sixth rib and axillary line. The pectoralis major was found to be in front of the cyst. Its fibres were therefore split with the hope of extracting the cyst through this split; this however was not possible. It was found that a portion of the cyst projected between the upper fibres of the pectoralis major and the clavicle. Finally the entire width of the pectoralis major was divided. The cyst was then found to press forward from beneath the clavicle. The axillary vessels and the brachial plexus were pushed forward. The cyst had extended beneath the pectoralis minor, and also in front of it so that it enveloped it. It

was multilocular, the locules having walls of different thicknesses and varying in size from a pullet's egg down. In some places the walls were very thin indeed so that these cysts ruptured on pressure. It was found that this growth extended well upward into the neck, portions of it being found beneath the lower portion of the sternomastoid muscle. The general appearance of the growth at the time of operation is indicated in Fig. 7, which was constructed from a sketch made by Dr. E. H. Pool at the time of operation. The cysts which broke contained thin serous fluid slightly yellowish in tinge. The growth extended over so far to the left as to involve the capsule of the shoulder-joint, and in the course of the dissection this joint was opened. It was manifest that it had the power of independent growth. The manner in which the clavicle was pushed forward, the axillary vessels and the brachial plexus were separated from it, the pectoralis major was pushed forward under strong tension, the pectoralis minor was enveloped both in front and behind, all gave evidence of a mass which was pushing its way along these tissues and following the line of least resistance.

This child made a reasonably good recovery from the operation and went home in a month.

At a later time in the winter he developed a sore throat with laryngeal obstruction and died.

Dr. Wm. C. Clarke, the pathologist of the hospital, was present at the operation and stained a part of the cyst wall with protargol as soon as it was removed, thus hoping to determine the character of the lining cells. A very beautiful endothelial lining was thus shown (Fig. 8). His report is here given.

*Pathological Report.*—J. A., 2293. February 5, 1913.

Gross Examination: Specimen consists of a sharply outlined lobulated oval tumor mass measuring 6 x 8 cm. Attached to this mass are two collapsed sacs of tissue; their walls are at points thin, elsewhere reinforced by considerable adventitious tissue.

Extending inward from the walls of the cavities are folds or reduplications that form compartments. These compartments or recesses connect with the main cavities of the sacs and are also crossed by numerous trabeculæ. There are other smaller cysts in these partitions. The content of these smaller unopened cysts is straw colored fluid.

The lining membrane of all the cavities is smooth and glistening. The substance of the sac wall is soft and resilient. This tissue is red, does not contain exudate, and there are no inflammatory signs present.

The uncollapsed mass on cut section is also found to be a cyst. The walls are 0.4 cm. in thickness. The tissue forming the wall is light in color and contains a small amount of inflammatory exudate. The cyst itself contains coagulated, clear, jelly-like exudate with radiating striations in the mass. This coagulated exudate is firmly adherent to the lining of the cyst cavity. Because of this, the lining of the wall is roughened and shaggy in appearance, not smooth and glistening as in the other cysts of the specimen. This portion of the specimen suggests that the cyst wall had been recently inflamed. Since the exudate as it poured out contained fibrinogen, fibrin was thrown down and the jelly-like coagulum resulted.

Microscopic Examination: Flat sections were stripped from the lining of the cyst cavities and were inpregnated with protargol. Following precipitation of the silver salt in the sunshine, it was found that all but the cyst that contained coagulated exudate was lined by completely specialized endothelium.

The salt was precipitated in such a manner that a mosaic, was formed of black lines of silver. This mosaic defined the margins of the lining cells, showing that they covered the surface in an even and distinct layer characteristic of the lining endothelium of established blood or lymph channels, and not characteristic of connective tissue lined cavities, as in a joint or bursa for example.

Sections from wall of uncollapsed cyst show a definite connective tissue stroma resting on striated muscle bundles. The lining of the cyst is covered by dense masses of fibrin in the meshes of which are many leucocytes and well preserved red blood cells. The actual lining cells of the cyst are elongated fibroblasts which infiltrate the attached fibrin. Where the fibrin is deficient the lining cells are flattened and evenly disposed with no tendency to project outward into the cyst cavity.

Sections from the walls of the sacs which had contained clear fluid show that the cells are flattened out and present a distinct cell wall corresponding to the tangential sections of the silver preparations. At points in the cyst walls are many cavities containing dense masses of red blood cells and apparently no fibrin. The outline of these cavities is sharp and distinct with no tendency on the part of the lining cells to grow in among the red blood cells.

Pathologist, William C. Clarke, M.D.

CASE III.—W. F., aged eleven months. St. Mary's Free Hospital for Children, History No. S. 10949. Jan. 18, 1913. Patient sent by Dr. Leonard Adair. At birth a slight protrusion was noticed on right side of neck. It has been gradually increasing, especially since a cold appeared ten days ago. Now there is a large cystic swelling on the right side of neck extending from clavicle, acromion and border of scapula up two-thirds of the way to ear, looks as though it contains 6 oz. of fluid. Child looks

fairly well nourished. The child went to the hospital with a temperature of 103°, this temperature subsided, but at the time of operation he had a temperature of 101°

*Operation* (January 21).—A long transverse incision was made and the fatty subcutaneous tissue was found to be œdematous. The cyst wall was not as definitely limited as if this œdema had not existed but it was fairly well dissected out. It extended forward to the sternomastoid muscle above the clavicle and behind its border. It extended backward under the trapezius and was so intimately adherent to the scaleni muscles that they were separated from it with great difficulty. Some of the branches of the cervical plexus were adherent in the wall of the growth. The posterior branch of the eleventh nerve could not be found.

An opening was made into the cyst wall fairly early in the operation and several ounces of pus exuded, this was reasonably thick, greenish in color and contained no coagulæ. When the mass was removed a smooth friable lining was found in its cavity. There were no lymph nodes apparent. The wound was partially closed, and drained. It healed satisfactorily and the child left the hospital two weeks after the operation.

Bacteriological examination of the pus showed both pneumococci and streptococci.

The microscopical examination of the cyst wall is given below.

*Pathological Report.*—W. F., 2292. February 5, 1913.

Gross Examination: Specimen consists of a sac wall the outer structures of which are fat and recent tissue. At one point the wall is distinct and free from fat.

The sac wall over the larger part of the specimen is 1 cm. in thickness diminishing from this extreme measurement to 2 mm.

The inner surface is exceedingly smooth and presents several folds and trabeculæ which partially subdivide the cavity. This inner lining is also exceedingly friable.

Cut section of the more solid portions of the wall show that there are two minute white areas in the lining of the main cavity. The tissue itself is yellowish pink with areas of fat.

There are no areas of definite degeneration. Sections of wall removed in fresh state and impregnated with protargol. After precipitation of the silver salt by sunshine, microscopic examination of lining showed that there were indifferent markings of silver but no distinct cell outline.

Hæmatoxylin and eosin stain of cross section of cyst wall shows that

it consists of granulation tissue. This granulation tissue is infiltrated with countless leucocytes and fibrin strands.

There are no areas of degeneration, no giant-cells and no epithelioid cells.

Microscopic examination of lymph node adjacent to cyst wall shows simple hyperplasia.

Diagnosis: Cyst of neck acute inflammation.

Pathologist, William C. Clarke, M.D.

CASE IV.—J. F., aged two years. St. Mary's Free Hospital for Children, History No. S. 11450. April 1, 1913. At birth there had been a slight "bubble like" swelling in the left side of the child's neck. This had increased during the last few months and had been treated by several doctors. One of them had drawn off considerable clear fluid by aspiration but the cyst had quickly filled again.

*Physical Examination.*—There was a cystic tumor on the left side of the neck which extended from behind the sternomastoid muscle forward almost to the median line and from the mastoid process nearly to the clavicle. This was very near the skin in some places and was apparently very thin walled. It fluctuated on pressure; there was no inflammation and the skin was not discolored over it.

*Operation* (April 1, 1913).—Transverse incision which had to be carried across the sternomastoid muscle. This muscle was divided. The cyst was multilocular, very thin walled, dark looking in places and extended up into the interstices of that portion of the neck. In removing it the internal carotid and internal jugular veins had to be separated for two inches or more. The internal jugular vein was liberated from it with great difficulty as it was densely adherent to it. The pneumogastric, phrenic and spinal accessory nerves were exposed for long distances. The cyst walls were attached firmly to the deep aponeurotic structures of the neck and the dissection went well down to the transverse processes of the cervical vertebræ, exposing the branches of the cervical plexus as well as the nerves previously mentioned. Apparently it was completely removed, but certain portions of the hygroma were so thin walled and the loculæ so small that their delicate structure could not always be distinguished from the normal tissues and it is possible that some little portions remained behind.

Wound was closed and child made a good recovery.

*Pathological Report.*—J. F., age two years. Specimen No. 2444. St. M., No. 1371. April 2, 1913.

Gross Examination: Specimen consists of a sharply outlined lobulated tumor mass somewhat oval in shape and measuring about 5.5 + 4 cm. Extending from the surface of this mass are a number of small thin and transparent walled cysts which in one area are joined together forming a chain. These small cysts are bound together as well as to the main tumor mass by strong bands of adventitious tissue. Attached to the tumor are two greatly enlarged lymph nodes.

The main cavity of cyst is divided by means of folds into a series of smaller cavities or compartments. Traversing these compartments are a number of fine strands or trabeculæ. The cysts contained a thin serous straw colored fluid.

The main cyst is lined by a smooth, glistening, pearly membrane. The sac wall is soft, elastic and very dense.

On sectioning one of the uncollapsed and smaller cysts the wall, though very thin, is found to be extremely dense and containing under considerable pressure a thin serous fluid.

The lining membrane of these cysts is similar to that of the larger one, namely, consisting of a pearly white membrane very smooth and glistening. There is no inflammatory reaction around the tumor. Specimen dissected from lining wall of cyst was impregnated with protargol.

Microscopic Examination: Tangential sections show the silver salts deposited in the intercellar cement substance giving to the tissue a mosaic appearance. The cells are seen to be highly specialized endothelial, similar to that seen lining the inner surface of blood and lymph vessels. The cyst wall is composed of a very definite connective tissue stroma, with no signs of inflammation.

Diagnosis: Hygroma.

Pathologist, Wm. C. Clarke, M.D.

One who studies these cysts must be impressed by two facts:

1. Their endothelial structure and multilocular development differentiate them from any of the other growths which are found in this locality.

2. They had an independent power of growth which was sufficient to force them with great power into the surrounding tissues.

The beautiful endothelial cells which existed in the second and fourth cases are shown in Figs. 8, 14 and 15, and a cross section of the endothelial structure which existed in the first case is shown in Fig. 3. Although a cross section does not show all the details of endothelium the cyst lining shown in

Fig. 3 very closely resembles that shown in Fig. 9. These linings differ from the epithelial linings which are found in branchial cysts and do not correspond to the tumors which are found in connection with ordinary lymph nodes. The structure is much more definite than one would find in an ordinary malignant tumor. The endothelial structure resembles that which is found in lymphatic vessels or in certain blood-vessels. It does not look like that which is found in joints or bursæ or which is developed in ordinary connective tissue.

We may dwell a little more at length on the enormous growing power which these cysts showed. The first one had worked its way forward above the clavicle and pushing around the internal border of the sternomastoid muscle had pushed downward behind the clavicle and behind the sternum, forming a saddle bag shaped cyst. When the child coughed and forced the fluid from the internal into the external part of this cyst the effect was startling. The external part of this cyst is indicated in Figs. 1 and 2. The communication between the two parts was large enough to easily admit the finger and the internal part extended for a wide distance behind the sternum into the mediastinum. The pressure force which carried it there must have been very great. When the external part of the cyst was removed and the pressure thus relieved, its internal part collapsed and healed and was not to be found at the second operation.

The growing power was shown again by the rapid recurrence between the two operations. Apparently all but the mediastinal part of the growth had been removed at the first operation, yet at the second operation, twenty-five days later, there was a multilocular thin walled cyst almost as large as the first one. The growth was as rapid as that of a very malignant tumor. The growth of the cyst in the second case had progressed with similar force. The way in which it pressed down into the axilla and enveloped the pectoralis minor muscle was remarkable. The first one formed a saddle bag cyst around the sternomastoid muscle, the second one formed a similar saddle bag cyst around the pectoralis minor muscle and pushed the pectoralis major forward so as to make

FIG. 1.

Cystic hygroma of neck. This cyst was multilocular. One portion extended around the lower inner border of the sternomastoid muscle into the mediastinum and formed a saddle-bag shaped cyst. Expansion could be noticed in the outer part when the child coughed. It contained clear fluid and was apparently lined with endothelium.

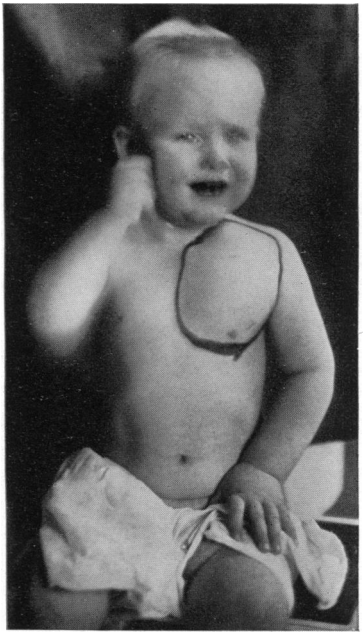
FIG. 2.

Posterior view of cyst shown in Fig. 1.

FIG. 3.

Cross section of cyst wall, Case I, showing lining which is believed to be endothelium a fibrous cyst wall, and round-celled infiltration.

FIG. 4.

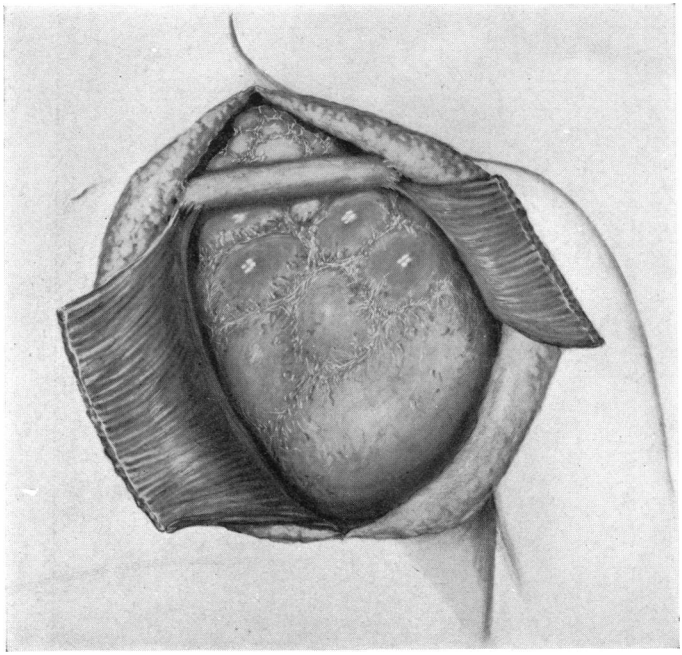


Case II. Cystic hygroma of neck and chest. The iodine mark indicates the boundaries of the cyst.

FIG. 5.

Case II. Cystic hygroma of neck and chest, side view. The growth extended under the pectoralis major muscle and pushed it forward.

FIG. 6.



Case II. Diagram of cyst from drawing made at time of operation (by Dr. Eugene H. Pool). The pectoralis major muscle has been divided and laid back from each side so as to expose the cyst *in situ*. The thoracic portion of the cyst seemed more recent than the cervical portion.

FIG. 7.

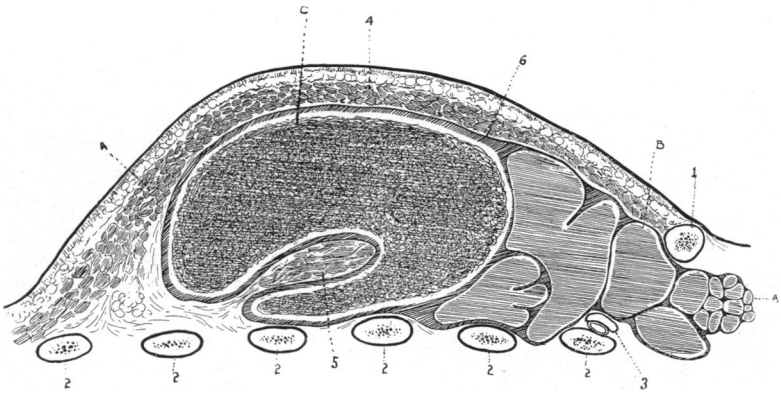



Diagram of vertical section of anterior chest wall and hygroma. (From drawing made by Dr. Wm. E. Clarke.) 1, Clavicle; 2, ribs; 3, axillary vessels; 4, pectoralis major muscle; 5, pectoralis minor muscle; 6, wall of cystic hygroma; *A*, small cysts in neck; *B*, larger cysts between clavicle and chest wall; *C*, cyst which had pushed in front and behind pectoralis minor muscle in saddle-bag shape. There were cocci and small round-cell infiltration in the wall of this portion of the cyst and there was fibrin in its content. Inflammation was thus indicated.

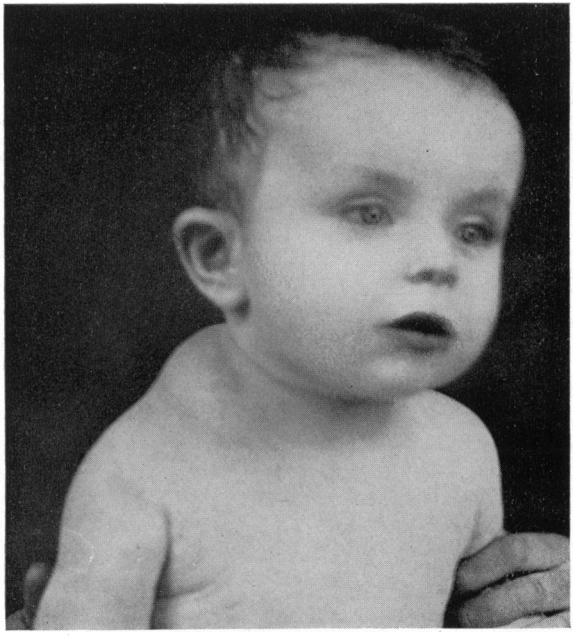
FIG. 8.

Case II. Cyst lining stained with protargol, showing delicate outlining of endothelial cells.

FIG. 9.

Case II. Cross section of cyst wall, showing endothelial lining, fibrous structure of wall and slight round-celled infiltration. This section is very similar to Fig. 3.

FIG. 10.

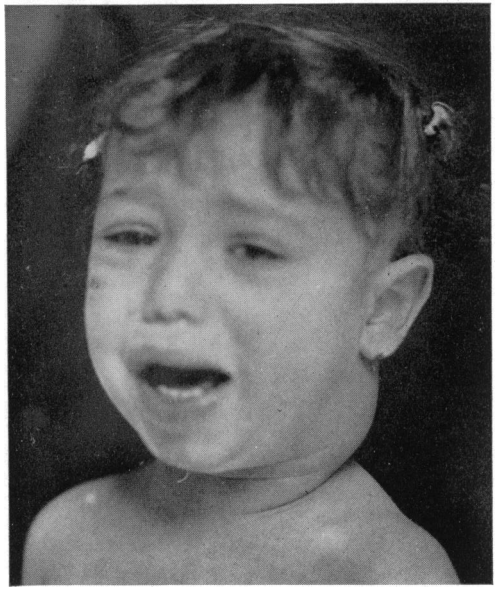


Case III. Believed to be hygroma of neck in which inflammatory changes had occurred. The history of the patient and the appearance of the cyst indicated "hygroma," but inflammation had so changed the cyst walls and contents that the original structure could not be definitely determined.

FIG. 11.

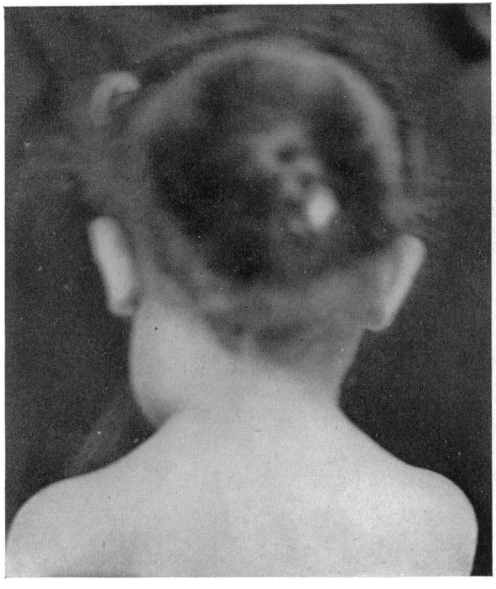
Case III. Cyst wall, showing extensive inflammation and small round-celled infiltration and disintegration of the cyst lining.

FIG. 12.



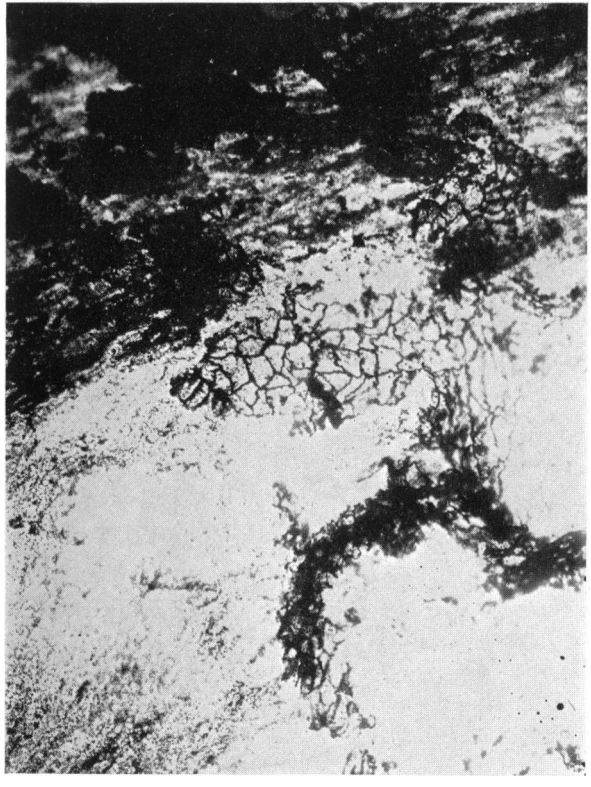
Case IV. Cystic hygroma of neck, child aged two years. A small cyst was present at birth and had recently increased in size. Clear fluid had recently been aspirated but the growth had continued. The endothelial lining of this cyst is shown in Figs. 14 and 15.

FIG. 13.



Case IV. Rear view.

FIG. 14.



Microphotograph of portion of cyst wall from Case IV. The outlines of the endothelial cells are marked by protargol stain.

FIG. 15.

Portion of cyst wall from Case IV. The outlines of the endothelial cells are stained by protargol, their nuclei are stained by hæmatoxylin.

a great protrusion on the anterior chest wall (See Figs. 4, 5 and 6).

The peculiarities of the cyst growth were well shown in the second case. The translucent loculi, which apparently were the most recently formed, contained clear serum and had very thin walls with delicate endothelial lining; on the other hand, there was at least one other loculus which showed in its wall inflammatory infiltration of small round cells and the presence of cocci; its contents were coagulated and jelly-like.

The wall of the cyst in the first case also showed inflammatory thickening.

The presence of inflammation in the walls of these two cysts suggests an explanation for the more extensive inflammation in the wall of the cyst in the third case.

All of these cysts corresponded to the ordinary method of development which has been described, in that there was a small bubble-like growth at birth which was almost quiescent for many months and which then took on rapid growth.

*Etiology.*—One's curiosity must be excited by the presence of these cysts. In order to explain them one must account for cystic lymphatic tissue which was present at birth, which was nearly quiescent for a long period and which then took on rapid forceful growth.

Max Borst,[1] has given a résumé of our knowledge on the subject. He states that their cause is not entirely clear. Luschka and Boucher consider them as arising from the intercarotid ganglion. Arnold opposed this and thought it a cystic development of the connective tissue. Others thought they were connected with the thyroid. Gurlt and Rohitansky, a subcutaneous hydrops. Lucke, Koster, Klelos, an endothelial cyst arising from lymph vessels.

He suggests the presence of a congenital sequestration as the cause.

Arnold[2] who studied the subject most thoroughly as far back as 1865 thought that a congenital defect underlay the condition.

[1] Die Lehre von den Geschwülsten, Weisbaden, 1902, p. 204.

[2] Virchow's Archiv, 1865.

It is to this theory of an embryonic sequestration that I will particularly ask attention. A sequestration of lymphatic tissue which had in it an independent power of irregular growth offers a satisfactory explanation for all the conditions found.

It is unnecessary before this audience to review the entire question of embryonal sequestrations or rests. All here know that in the growth of the body fragments may be separated from the main portion of any one of the organs and that the closure of embryonic ducts or the development of other embryonic structures may be incomplete. The sequestrations or rests thus remaining may under certain conditions develop in irregular ways. Thyroglossal, branchial, dermoid, ovarian, parovarian, mesenteric or urachal cysts may be examples of such growth. Sometimes the growth seems little more than the distention of closed ducts owing to the activity of the epithelial cells which line it. At other times the growth is more active than this, *e.g.*, the semi-malignant growth of misplaced portions of the suprarenal bodies.

If we study the comparative anatomy of the lymphatic system we find many reasons for expecting occasional lymphatic rests. In fishes[3] for instance the lymph vessels are not so plainly differentiated from the venous system as in the higher forms—a lymph sinus connected with a vein occurs on either side in the scapular region and into it lymphatic trunks from the head and body open.

Huntington, of Columbia, and McClure, of Princeton, have given much study to the comparative anatomy of the lymphatic system. The jugular lymph sac, depicted in Fig. 16, is a structure found in many animals and might well give rise to a sequestration in its development.

Professor McClure who has seen some of my specimens writes as follows:

"I think there can be no doubt about the cystic growths you speak of being due to embryonic sequestrations of lymphatic tissue.

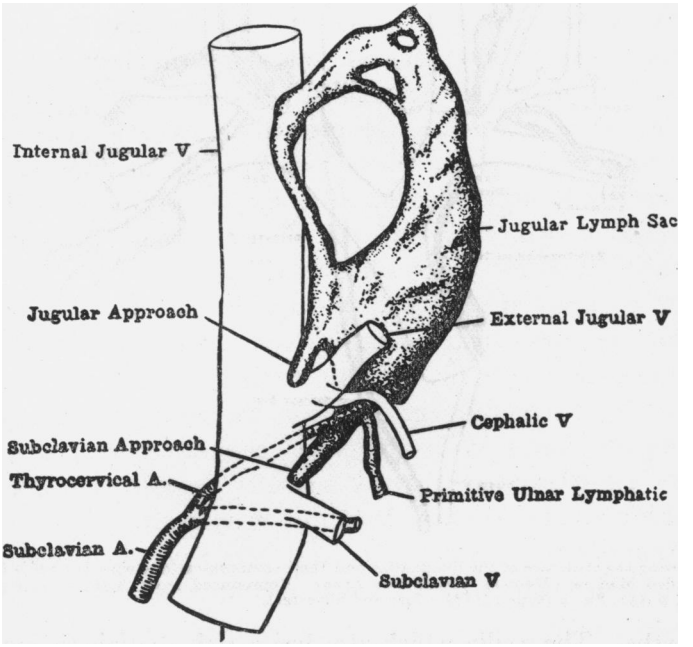
[3] Wiedersheim, Comparative anatomy of Invertebrates, MacMillan, 1907, p. 432.

"Both Huntington and I have found that the lymphatics in the neck region of mammals develop as independent structures which secondarily connect with the veins. In certain cases some of these independent structures may never join the vein and give rise to the structure you mention. I have found the same condition in fishes, so one may regard this principle of development as uniform for vertebrals in general."

Fig. 17 shows an arrangement well adapted for the production of sequestrations.

The literature of the subject of hygromas throws much

FIG. 16.




A reconstruction of the left jugular lymph sac of a 11 mm. cat embryo (*Felis domesticus*). Reproduced from Anatomical Record, vol iii, p. 535 (McClure and Silvester).

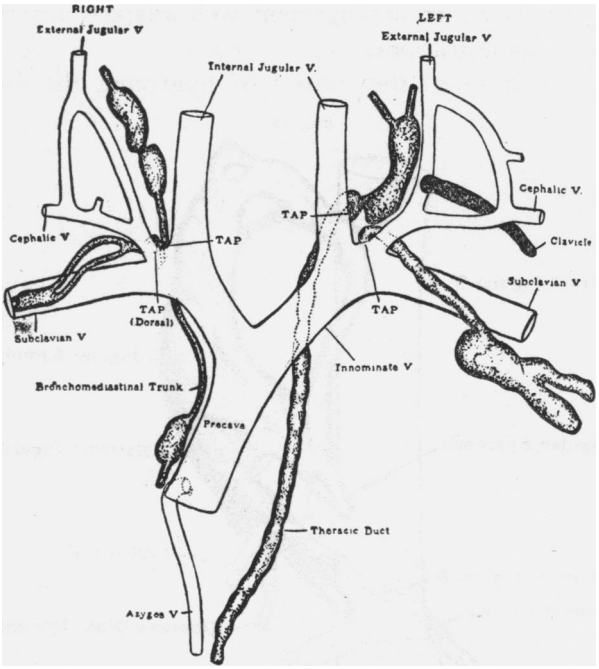
light on the peculiarities of their occurrence and strengthens our belief in the method of development above given.

Dr. Farr has made out the following tables endeavoring to include only those cases which were definitely hygromas, according to the definition above given. It is not possible to make a list which is altogether satisfactory, *e.g.*, in only 15 of the 91 cases in the first table is there a definite state-

ment of the endothelial lining of the cysts and we do not know how well the staining was done in most of these 15 cases.

The group division here given is about what would be expected. The neck is the part of the body most richly supplied with lymphatics and hence the most common site of these

FIG. 17.




Showing the structure of the lymphatics and their communications with the veins in the Pig-tailed Macque (*Macacus nomestrinus Linn*). Reproduced from Anatomical Record, vol iii, p. 551, Fig. 9 (type 11) (McClure and Silvester).

growths. The axilla which also has a rich lymphatic supply shows the next largest number. Without doubt some of the axillary growths pressed through from the neck as in the writer's second case or were associated with the neck cysts as in Case 1.

It is a little strange that so few cases are reported in the groin but there are enough to establish their existence.

It is also noteworthy that so little of the literature is recent. Most of the recent cases are described under the

# HYGROMA CYSTICUM COLLI.

Table of Reported Cases of Hygroma. Prepared by Dr. Charles E. Farr.

| No. | Author | Age | Sex | R. | L. | Operation | Autopsy | Result | Contents | Uni-locular | Multi-locular | Endo-thelium | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Arnold | 1 wk. | M. | + | | | + | d. | | | + | + | Virchow., Archiv., 1865, Bd. 33, p. 209. |
| 2 | Arnold | Fœtus | | + | + | | + | d. | | | + | + | Virchow., Archiv., 1865, Bd. 33, p. 209. |
| 3 | Hawkins | 8 mo. | | + | | Repeated puncture | | c. | Fluid serum | | + | | Medico-Chir., Tr., 1839, v. 22, p. 231. |
| 4 | Hawkins | 1 yr. | | + | | + | | ? | + | | + | | Medico-Chir., Tr., 1839, v. 22, p. 231. |
| 5 | Hawkins | 11 wks. | | + | | None | | d. | + | | + | | Medico-Chir., Tr., 1839, v. 22, p. 231. |
| 6 | Arnott | 1 mo. | F. | | + | Puncture and excision | | c. | + | | + | | London M. Gazette No. 3, v. 1, 1839. p.917. |
| 7 | Nelaton | N. B. | | + | | Puncture and excision | | c. | + | | + | | Gazette d' Hôpt., 1854, No. 78, p. 310. |
| 8 | Lorain | N. B. | M. | + | + | None | + | d. | + | | + | | Gaz. med. d. Paris, 3 Ser., T. viii, 1853. |
| 9 | Storch | 4 wks. | M. | | + | Punctures | + | d. | + | | + | O | p. f. Kinderkrankheiten 1861., p. 68. |
| 10 | Bruch | N. B. | M. | + | | | + | d. | + | | + | O | Zeitach. f. Rat-med., Bd. 8, p. 91. |
| 12 | Evans | 1 yr. | M. | + | | Seton | | c. | + | | + | | Lond. Med. Ex. May, 1850; Handbuch der Kinderkr, 1854, p. 786. |
| 13 | Roux | 3 mos. | | | | Incision | | c. | | | | | Rec. Med. chir., 1855. |
| 14 | Gilles | | | | | Excision | | d. | | | | | Dissertation. Bonn, 1852. |
| 15 | Gilles | | | | | Excision | | d. | | | | | Dissertation. Bonn 1852. |
| 16 | Roux J. | 8 d. | M. | | + | Injection iodine | | c. | + | | + | | Bull. Gen. de Therap. v. 51, p. 455. |
| 17 | Roux J. | 15 mos. | F. | | + | Injection iodine | | c. | + | | + | | Bull. Gen. de Therap. v. 51, p. 456. |
| 11 | Ebermaier | 2 mos. | F. | + | + | None | + | d. | Bloody serum | | + | | Caspar's Wchn, 1836, p. 13. |
| 18 | Wutzer | 11 d. | M. | + | + | None | + | d. | + | | + | | Caspar's Wchn, 1836, p. 257. |
| 19 | Völckers | 14 d. | F. | + | | Puncture | + | d. | Clear serum | | + | | Caspar's Wchn, 1837, p. 704. |
| 20 | Bednar | 55 d. | F. | | + | Incision | + | d. | + | | + | | Krankheit de Neugebor, 1850. |
| 21 | Bouchut | 21 d. | | | + | O | + | d. | + | | + | | Kinderkrankheiten, 1854, p. 786. |
| 22 | Berend | 12 w. | | R | | Puncture and iodine | | Imp. | + | | + | | Med. Zentral-Zeit, 1861, p. 286. |
| 23 | Ebert | 7 yrs. | M. | | | Puncture and iodine | | Imp. | + | | + | | Med. Zentral-Zeit, 1861, p. 286. |
| 24 | Ammon | N. B. | | | + | O | + | d. | Red serum | O | | | Angeboren. Chir. Krankheit., 1842, p. 54. |
| 25 | Droste | N. B. | F. | | | Seton | | c. | + | | + | | Halscheis Hannover Annal, 1839, p. 295. |
| 26 | Scholz | 22 yr. | M. | | + | Partial excision | | c. | + | + | | | Wien. Med. Wochn, 1863, v. 13, p. 612. |
| 27 | Schuh | N. B. few mos. | | | | Excision | | | Clear serum | | + | | Path. and Therap. d. Pseudoplasm, 1854, p. 196. |
| 28 | Wernher | N. B. | F. | | + | Spont. rupture | + (later) | c. | + | | + | | Angeborene Cystenhygrom, 1843. |
| 29 | Ammon. | 1 yr. | | + | + | O | | Unchanged | | | ? | | Angeb. Chir. Krankheit, 1892, p. 57. |
| 30 | Redenbacher | | | + | + | | O | d. | | | | | Diss. München, 1828. |
| 31 | Otto | N. B. | M. | + | + | | + | d. | + | | + | | Monst. Sexcent. Vratirl, 1841. |
| 32 | Jackson | 3 yrs. | M. | | + | Excision | | c. | + | | + | | Am. Jr. Med. Sci., 1861, p. 101. |
| 33 | Gurlt | Fœtus | M. | + | + | | + | d. | + ? | | + | | Cyst. Geschülst des Halses, 1855. |
| 34 | Gurlt | Fœtus | | + | + | | + | d. | + | | + | | Cyst. Geschülst des Halses, 1855. |
| 35 | Gurlt | 12 wks. | F. | + | + | Puncture | | d. | + | | ? | | Cyst. Geschülst des Halses, 1855. |

## HYGROMA CYSTICUM COLLI.—*Continued.*

| No. | Author | Age | Sex | R. | L. | Operation | Result | Autopsy | Contents | Multilocular | Cyst Wall | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | Bednar | N. B. | F. | | + | Puncture | d. | + | Serum | + | | Kranhheiten des Neugeboren, 1850. |
| 37 | Adelman | 5 wk. | M. | | + | Puncture and Seton | c. | | Serum | + | | Walther u Ammon fr. de Chir., 1850, p. 237. |
| 38 | Zangenbeck | 25 yr. | M. | | | Excision | c. | | Serum | + | | |
| 39 | Koenig | | | | | Excision | c. | | Serum | + | | |
| 40 | Nasse | 25 yr. | F. | | + | Excision | c. | | Serum | + | Endothel'm | Archiv. f. klin. Chir., B. 38, 1889, p. 614. |
| 41 | Nasse | 19 yr. | F. | + | | Excision | c. | | Serum | + | Endothel'm | Archiv.,f. klin, Chir.,B.38,1889,p.614. |
| 42 | Nasse | 2 yr. | M. | + | + | Excision | c. | | Serum | Unilocular | Endothel'm | Arch. f.klin, Chir., B. 38, 1889, p. 614. |
| 43 | Nasse | 11 yr. | M. | | + | Excision | c. | | Bloody serum | Unilocular | Endothel'm | Archiv.,f.klin, Chir., B.38,1889, p.614. |
| 44 | Kenerson | 5 mo. | | + | | Excision | d. | | Bloody serum | Multilocular | Endothel'm | Phil. Med. Jr., 1901, v. 8, p. 533. |
| 45 | Halstead and Herzog | 22 mo | F. | | + | Excision | c. | | Bloody serum | Multilocular | Endothel'm | J. A. M. A., 1899, v. 32, p. 233. |
| 46 | De Quervain | Adult | F. | + | | | | | | Multilocular | | Spezielle Chir. Diag., 1913, p. 169. |
| 47 | Sicls | 2 yr. | M. | | | | | | | | | Virchow Archiv., 1903,Bd. 72, p. 445. |
| 48 | Carless | 5 yr. | F. | + | | Excision | c. | | Bloody serum | Multilocular | Endothel'm | Med. Press and C., 1904, v. 1, p. 140. |
| 49 | Carless | 3 d. | | | + | Excision | d. | | Serum | Multilocular | O | Med. Press and C., 1904, v. 1, p. 140. |
| 50 | Robinson | 3 mos | M. | + | | Partial excision | d. | | Serum | Multilocular | | Trans. Path. Soc., Lond., 1895–6, v. 47, p. 255. |
| 51 | Koester | N. B. | | + | | Puncture | d. | | Serum | Multilocular | + | Wurzburger Abhand, 1872, Bd. iii, p. 44. |
| 52 | Wölfler | 3 yr. | F. | + | | Incision | c. | | Serum | Multilocular | | Wien. Med. Press, 1886, B. 27, p. 906. |
| 53 | Paetzold (Garré) | 5 wk. | F. | + | | Partial excision | d. | + | Serum | Multilocular | | Bruns Beiträge, 1906, No. 51, p. 652. |
| 54 | Paetzold | 8 mo. | F. | + | | Excision | d. | + | Bloody serum | Multilocular | + | Bruns Beiträge, 1906, No. 51, p. 652. |
| 55 | Paetzold | 13 mo. | M. | | + | Excision | c. | | Bloody serum | Multilocular | | Bruns Beiträge, 1906, No. 51, p. 652. |
| 56 | Paetzold | 3 yr. | M. | + | | Excision | c. | | Bloody serum | Multilocular | | Bruns Beiträge, 1906, No. 51, p. 652. |
| 57 | Paetzold | 2 yr. | F. | + | | Excision | c. | | Blood and ser. | Multilocular | + | Bruns Beiträge, 1906, No. 51, p. 652. |
| 58 | Paetzold | 37 yr. | F. | + | | Excision | c. | | Serum | Unilocular | O | Bruns Beiträge, 1906, No. 51, p. 652. |
| 59 | Trendelenburg | 2 yr. | M. | + | | Injection-iodine | d. | | Brown serum | Multilocular | O | Archiv.f.klin. Chir.1872,Bd.13 p. 404. |
| 60 | Trendelenburg | 9 d. | M. | | + | Injection-iodine | c. | | Serum | Unilocular | | Archiv.f.klin. Chir.1872, Bd.13 p 304. |
| 61 | Trendelenburg | 1 d. | M. | + | | Injection-iodine | c. | | Bloody serum | Unilocular | | Archiv.f.klin.Chir.,1872, Bd.13,p.404. |
| 62 | Winiwarter | 14 m. | M. | | + | O | d. | Partial | Bloody serum | Multilocular | + | Archiv.f.klin.Chir.,1874 B. 16, p. 655. |
| 63 | Schwerin | N. B. | F. | + | + | Puncture of ranula | d. | + | Serum | Multilocular | No cylinder epithel'm | Archiv.f.klin.Chir., 1874, B.23, p.430. |
| 64 | Burow | | | | | Partial excision | d. | | | | | Archiv. f. klin.Chir., 1871,B.12, p.979. |
| 65 | Burow | 14 m. | | | + | Drainage | c. | | Serum | Multilocular | | Archiv.f.klin.Chir., 1871, B.12, p.979. |
| 66 | Birkett | 20 | M. | R | | Puncture repeated | Unim. | | Clear serum | + | | Med. Times and Gazette, 1868,ii p.79. |
| 67 | Albert | Adult | M. | R | | Puncture | | | Serum | ? | | Lehr. d Spec. Chir., 1897, Bd.i, p. 216. |
| 68 | Roberts | 3 yrs. | M. | | L | Excision | d. | | Serum | + | | Phil.Med.Times, 1875, Mar.13, p.372. |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 69 | Boinet | | | | Injection | c. | | | | | Bull. d. l. Soc. d Chir., d Paris, 1859. x, p. 222. |
| 70 | Robert | | | | Puncture | d. | | Serum | + | | Bull. d. l. Soc. d. Chir. d Paris, 1859, x p. 222. |
| 71 | Broca | N. B. | | R. | Punc. and Excis. | d. | | Serum | + | | Bull. d. l. Soc., d Chir. d Paris, 1859, x p. 222. |
| 72 | Guillaumet | Fœtus | | | O | | + | Bloody serum | + | | Bull. d. l. Soc. anatomique, 1879, ix 582. |
| 73 | Hardie | 5 m. | F. | L. | Excision | c. | | Serum | + | | Lancet, 1872, v. 2, p. 667. |
| 74 | Hogg | 14 m. | | | Seton | c. | | Serum | + | | Lancet, 1873, v. 2, p. 812. |
| 75 | Holmes | 8 yrs. | M. | R. | Excision | c. | | Serum | + | | Med. Times & Gaz. 1864, v. 1, p. 76. |
| 76 | Hewitt | 6 m. | F. | | Partial excision | c. | | Serum | + | | Med. Times & Gaz., 1864, v. 1, p. 76. |
| 77 | Smith | 3 wk. | F. | L. | O | Imp. | | | | | St. Barthol Reports 1866, v. 2, p. 24. |
| 78 | Smith | 8 m. | M. | R. | Seton | c. | | Serum | + | | St. Barthol Reports 1866, v. 2, p. 31. |
| 79 | Smith | 3 yrs. | F. | R. | Seton | c. | | Serum | + | | St. Barthol Reports 1866, v. 2, p. 31. |
| 80 | Smith | Infant 6 mo. | F. | L. | Seton | c. | | Serum | + | | St. Barthol Reports 1866, v. 2, p. 31. |
| 81 | Dittl | 2 yrs. | M. | R. L. | Excised | c. | | Serum | + | | Oster. Zeitschift f. Prah, Heil, 1859, v. 81. |
| 82 | Valenla | N. B. | M. | R. L. | O | d. | + | Serum | + | | Oster Handb. f. Paediatrik, 1871, ii 35. |
| 83 | Devatz | 6 m. | | L. | Punctured | c. | | Bloody serum | + | | Bull. et Mem d. l. Soc. d. Chir. d Par. 1876, ii, 762. |
| 84 | Kumemüller | 8 mo. | | R. | Cautery | d. | + | Serum | + | Endothel'm. | Jahrbuch f. Kinderheit 1898, B. 48, p. 390. |
| 85 | Hofmohl | 16 yrs. | F. | R. | Excised | c. | | Serum | Uni. ? | Endothel'm | Archiv. f. Kinderheit 1887, viii, 220. |
| 86 | Parrot | 2 m. | F. | | O | | | | + | | Gaz. des Hôpit., 1880, p. 35. |
| 87 | Lannelongue | 2 yr. | | | Puncture | d. | + | Serum | + | | Gaz. des Hôpit., 1880, p. 199. |
| 88 | Kocher | 3 m. | | | Injection-iodine | c. | | Serum | + | | Corresp. blat. f. Schweizer A. 1878, viii, 625. |
| 89 | Stolz | 5 d. | M. | R. | Puncture | d. | + | Serum | + | | Rev. Med. d L. Est., 1878 x, p. 161. |
| 90 | Lücke | 4 d. | | L. | Puncture | d. | + | Serum | + | | Virchow Archiv. 33, 1865, p. 330. |
| 91 | Lücke | few wk. | | R. | O | d. | + | Serum | + | | Virchow Archiv. 33, 1865, p. 330. |

## HYGROMA CYSTICUM AXILLARE.

| No. | Author | Age | Sex | R. | L. | Operation | Result | Autopsy | Contents | | Cyst Wall | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Sandifort | | F. | R. | L. | Punctures | c. | | | Lining | Multilocular | Obs. Anat. path, .v. iv, p. 21. |
| 2 | Hawkins | | | | | | | | | | | London Med. Chir., Tr. v. 22, p. 236. |
| 3 | Tofft | | | R. | | Puncture | c. | | | | Multilocular | |
| 4 | James | 5 | M. | | L. | Excision | c. | | Serum | Endothel'm | + | Lancet 1891, v. 1, p. 1372. |
| 5 | Senn | | | | | Excised | c. | | | | + | Internat. Clin., 1903, 13, s. 1 p. 129. |
| 6 | Nasse | 5 mo. | | | L. | Excised | c. | | Serum | + | + | Archiv. f. klin. Chir, 38, 1889, p. 614. |
| 7 | Nasse | 8 yr. | F. | | L. | Excised | c. | | Serum | + | + | Archiv. f. klin. Chir. 38, 1889, p. 614. |
| 8 | Nasse | 2 yr. | F. | R. | | Excised | c. | | Serum | + | + | Archiv. f. klin. Chir. 38, 1889, p. 614. |
| 9 | Nasse | 3 yr. | F. | | L. | Excised | c. | | Bloody serum | + | + | Archiv. f. klin. Chir. 38, 1889, p. 614. |
| 10 | Koenig | 11 yr. | | | | Excised | | | Blood and serum | + | + | |
| 11 | Carless | 6 yr. | M. | | L. | Excised | c. | | Serum | | + | Med. Press & C. 1904, v. i, p. 140. |
| 12 | Ribbert | 10 yr. | M. | | | Excised | | | Serum | + | + | Virchow Archiv. Bd 151, p. 392. |
| 13 | Rumbold | 4 d. | | R. | | Puncture and excision | c. | | Serum | + | + | Wein klin. Wchn, 1894, No. 7, p. 531. |
| 14 | Weinher | | | | | | | | | | | Angeborener Cysten Hygrom, 1845, p. 488. |
| 15 | Verneuil | 10 yr. | | | | | | | | | | |
| 16 | Heschl | 9 m. | | | L. | Partial excision | d. | + | Serum | | + | Uber ein angeborener Cysten hygrom der achulhöhle, 1876. |
| 16 | Rumbold | 9 m. | | | L. | Excision | d. | | Serum | + | + | Wein klin. Wchn., 1894, No. 7, p. 533. |
| 17 | Rumbold | 2 yr. | M. | | L. | Drainage | c. | | | | | Wein klin. Wchn, 1894, No. 7, p. 552. |
| 18 | Gjorgjevic | 2 m. | M. | R. | | Puncture | c. | | Serum | | + | Archiv. f. klin. Chir., xii, 1871, p. 685. |
| 19 | Brazis | 7 w. | F. | | L. | Excision | c. | | Serum | + | + | Bruns Beiträge, 18, 1897, p. 379. |
| 20 | Brazis | 2½yr. | M. | R. | | Excision | c. | | Serum | + | + | Bruns Beiträge, 18, 1897, p. 379. |
| 21 | Brazis | 15 yr. | F. | | L. | Puncture electrolysis excision | c. | | Serum | + | + | Bruns Beiträge, 18, 1897, p. 379. Bruns Beiträge, 18, 1897, p. 379. |
| 22 | Brazis | 1 m. | M. | | L. | O | d. | + | Serum | + | + | Bruns Beiträge, 18, 1897, p. 379. |
| 23 | Anders | 2 yr. | | R. | | O | c. | | Serum | | + | Jahrb Kinderheil n. F. Bd 16, 1881, p. 429. |
| 24 | Birkett | 28 | M. | R. | | Excision | c. | | Serum | | | Med. Times & Gazette, 1868 v.2, p. 79. |
| 25 | Wegner | 9 m. | M. | R. | | Excision | d. | + | Serum | | + | Archiv. f. klin. Chir. xx, 1877, p. 674. |
| 26 | Wegner | 2½ yr. | F. | R. | | Excision | c. | | Serum | | + | Archiv. f. klin. Chir. xx, 1877, p. 689. |
| 27 | Müller | 1 yr. | | R. | | Excision | d. | | Serum | + | + | Bruns Beiträges Bd. i, 1883, p. 500. |
| 28 | Riedinger | 35 yr. | M. | | L. | Excision | | | Serum | | + | Deutsche Chir., 1888, L. 42, p. 251. |
| 29 | Pinner | 4 yr. | M. | | L. | Injection $ZnCl_2$ | c. | | Serum | | + | Central blatt f. Chir., 1880, p. 177. |
| 30 | Pilate | 2½ yr. | | | L. | Excision | c. | | Blood and serum | | + | Bull. et Mem. d. l. Soc. de Chir. de Paris, 1878, p. 815. |
| 31 | Birkett | 7 | M. | R. | | Excision | c. | | Serum | | + | Med. Times & Gazette, 1868, ii, p. 79. |
| 32 | Koenig | Few mos. | | | | | | | Serum | | + | Lehrb. d Spec. Chir., 1889, ii, p. 40. |
| 33 | Smith | 14 w. | M. | Post | | Seton | Imp. | | Serum | | + | St. Barthol. Rep. v. 2, 1866, p. 32. |
| 34 | Smith | 2 yr. | F. | | L. | Seton | c. | | Serum | | + | St. Barthol. Rep. v. 2, 1866, p. 32. |
| 35 | Dubar | 4 m. | M. | | L. | Excision | c. | | Bloody serum | Endothel'm | + | Bull. d. l. Soc. Anat. de Paris, 1892, p. 286. |

## HYGROMA CYSTICUM (GENERAL).

| Number | Author | Age | Sex | R. L. | Operation | | Result | Autopsy | Contents | Multi-locular | Cyst Wall | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Paetzold | 4 d. | F. | + | Thigh and leg | Excision | c. | | Lymph | + | | Bruns Beiträge, 1906, No. 51, p. 652. |
| 2 | Hildebrand | 1 m. | F. | | Rectal sacral | Excision | d. | + | Lymph | + | Endothel'm | Archiv. f. klin. Chir. B. 49, 1894, p. 204. |
| 3 | Hildebrand | 3 yr. | M. | | Rectal sacral | Excision | | | Lymph | + | Endothel'm | Archiv. f. klin. Chir., B. 49, 1894, p. 204. |
| 4 | Reichel | 1 m. | M. | | Left perineum | Puncture incision | d. | + | Lymph | + | Endothel'm | Virchow. Archiv. 46, 1869, p. 497. |
| 5 | Müller | 2 m. | F. | | Lips, tongue, cheek | Excision | c. | | Lymph | + | | Bruns Beiträge, 1883, Bd. i p. 498. |
| 6 | Verneuil | 7 yr. | | | Perineum | Excision | | | Lymph | + | | Cruveilhier Anat. Path. Gen. T. iii, 1856, p. 498. |
| 7 | M. Deguise | 18 yr. | M. | | Abdominal wall | Excision | | | Lymph | + | | Bull. d. l. Soc. d. Chir. d. Paris, 1857, T. 8, p. 459. |
| 8 | Morel-Lavallié | | | R. | Shoulder | O | | + | Lymph | + | | Bull. d. l. Soc. d. Chir. d. Paris, T. 10, 1859, p. 230. |
| 9 | Smith | 18 m. | F. | R. & L. | Back of neck | O | Imp. | | | + | | St. Barthol. Rep., v. 2, 1866. |
| 10 | Smith | 3 m. | F. | | Dorsal spine | O | Imp. | | Lymph | + | | St. Barthol. Rep. v. 2, 1866. |
| 11 | Delbet | 3 m. | | R. | Orbital | Excision | | | | | | Bull. d. l. Soc. Anat. de Paris, 1893, p. 637. |

heading of lymphangioma and it is difficult to sift out the cases which are really hygromas. Winglowski's [4] recent article should be referred to, he studied various neck anomalies and dissected 150 half necks in children and adolescents and found rests 23 times.

It would be very gratifying to explain the remarkable power of growth which these cysts have. Unfortunately we cannot do this with absolute accuracy any more than we can tell why some people grow to be large and others remain small. There are, however, many other instances of somewhat similar growth. Ovarian cysts, parovarian cysts, dermoid cysts, both abdominal and subcutaneous, hypernephromas, mesenteric cysts, thyroglossal and branchial cysts, lipomata, exostoses, growths of the carotid body, common warts are all examples of individual power of growth which comes in tissues otherwise benign. In view of these examples it is not strange that sequestrations of lymphatic tissue in the neck should occasionally show this great power of growth.

SUMMARY.—1. Cystic hygromas of the neck have been described for many years and their existence is undoubted.

2. The term should be restricted to cysts lined with endothelium and having a marked power of growth.

3. Such cystic growths are uncommon. A careful search of the literature has so far revealed records of only 91 cases located distinctly in the neck and 35 cases located principally in the axilla, but in part at least extending there from the neck.

4. The writer records three cases of undoubted hygroma and a fourth case which is believed to have been a hygroma but in which inflammation had destroyed the finer structure of the cyst walls.

5. The most satisfactory explanation of the existence of these hygromas is that embryonic sequestrations of lymphatic tissue existed and that they had the power of persistent irregular growth.

6. Excision is the best treatment. If this is impracticable partial excision is the next best.

[4] Archiv f. Klin. Chir., 1912, vol. 98, p. 151.