THE PRESENT STATUS OF THE TREATMENT OF MASTOIDITIS.*

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Mastoiditis and its treatment have been for the past thirteen or fourteen years a fruitful theme for thoughtful discussion. Numerous articles from able pens have been contributed and we now pause and contemplate what the present status of the treatment of the disease is. In order to arrive at some conclusions, the essayist addressed some questions to leading otologists of this country and Canada. Numerous replies have been received which are tabulated in the table herewith submitted. A great number of the replies received do not reveal the writers' names. By exclusion the essayist thinks that he has located some but others he could not, and only those names appear in the table who signed their answers and those whom the writer feels sent answers. The questions submitted are as follows:

- (1) Your treatment for acute mastoiditis, especially concerning the application of heat and cold or both to the mastoid process?
- (2) How long do you apply cold to the mastoid before resorting to operation or heat?
- (3) If you use heat, how do you apply it?
- (4) Do you make an exploratory operation for mastoiditis?
- (5) In what proportion of your cases of mastoiditis have you found operation necessary?

It is but fair before submitting the answers to these questions that I give the results of my own experience.

In acute mastoiditis my preference has always been for dry heat. I believe that according to the recognized principles of surgery that in such cases we want diapedesis and not stasis. To accomplish this end we need an increase in the size of the blood vessels to more readily remove the obnoxious products of inflammation, and as Nancrede well says in his "Principles of Surgery," "The only means which will produce this local increase in the size of the veins is heat, and a moderate degree of this, such as can be comfortably endured." The heat relieves the pain and does not mask the symptoms. Cold

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may do the first, but it does mask important symptoms. Cold will diminish the caliber of the vessels, but the vitality of the cells are impaired and the leucocyte's activity is diminished. Hence stasis and thrombosis of the vessels at the seat of inflammation. (Nancrede.)

A case reported to the section of Laryngology and Otology of the American Medical Association at its Saratoga meeting shows the bad effect of long continued application of cold. It had been applied continuously for one month, the patient still suffering pain, but without tenderness over the mastoid when examined for the first time by the writer. Yet when operated upon the whole process was necrotic, the tegmen eroded and a subsequent operation revealed a large brain abscess in the temporo-sphenoidal lobe which had been missed in the first operation, though searched for because of the symptoms of brain abscess.

Many who use cold externally also use hot douches frequently repeated within the external auditory canal—a fairly good compromise. In the application of the heat no better means of its application can be found than in the little Japanese pocket stove. It is light, will burn for two to three hours at a constant temperature, and can be closely applied to the head of our patient by a bandage. This cannot be said of the hot water bottle or the bran bags. The amount of heat passing out into the tissues can be nicely regulated by wrapping it with a handkerchief or gauze. We cannot expect much of result by using the hot water bottle or the Leiter coil. We must have something which can be closely applied to the head and which will keep a constant temperature for hours at a time.

As Dench in a recent article points out an exploratory operation is not amiss when needed to clear up a diagnosis. The mastoid operation is simple and it is rarely the misfortune of a competent surgeon to lose a case from operation for simple mastoiditis.

It is the experience of the writer that operation is necessary only in about one out of eight cases, using the treatment outlined above together with such general remedies as any case may call for, e. g., blood letting, paracentesis of the drum, etc. Having thus briefly given his views, the writer will briefly pass over the view of authorities who have not answered these questions, but whose answers may be found in their writings.

In the *American Journal of Medical Sciences*, April, 1902, B. A. Randall believes that in the abortive treatment of acute mastoiditis heat is superior to cold.

Alderton in Posey & Wright's new work on "Diseases of the Eye, Nose, Throat and Ear," advocates the douching of the external

auditory canal with hot water and the external application of heat to the mastoid process.

Politzer in his late work on "Diseases of the Ear" advocates cold.

Dench advocates heat in preference to cold.

Barr prefers heat.

Roosa in his work, published in 1885, prefers poultices.

Burnett in "Diseases of Ear, Nose and Throat" by Barnett, Ingalls and Newcomb evidently believes in immediate operative interference. (P. 168.)

Clarence J. Blake in "Burnett's System of Diseases of the Ear, Nose, and Throat" (1893), advocates the use of cold over the mastoid together with paracentesis of the drum membrane.

McBride in "Diseases of the Throat, Nose and Ear" (1894), advocates the use of cold.

Bishop in his book advocates the local application of cold.

Horace G. Miller in "American Text Book of Diseases of the Eye, Ear, Nose and Throat," advocates the use of dry heat.

Pritchard's "Diseases of the Ear," recommends the avoidance of cold applications and in "deep mastoiditis" the use of hot applications with the other treatment which he recommends.

Bacon in his "Manual of Otology" recommends cold in early stages.

In his work on "Diseases of the Ear" (1886), Pomeroy gives preference to poultices.

In mastoid abscesses and their treatment Broca and Lubet-Borbon recommend cold. Sargeant F. Snow is a firm believer in the very prolonged application of cold to the mastoid process, but also recommends hot water injections by a fountain syringe. Mark Hovell prefers cold by the means of the Leiter coil.

NAME.	QUESTION I.	QUESTION II.	QUESTION III.	QUESTION IV.	QUESTION V.
Atkinson, J. W. Paerson, N. J.	Heat (dry). Bichloride douches (hot) of auditory canal after paracentesis.		Hot water bags or bran bags.	Only when symptoms in- dicate infection beyond middle ear.	
Ayres, S. C. Ohio. Cincinnati.	Heat. Cold.	For a few days.	Japanese pocket stove.	No.	Large proportion.
Barnhill, I. F., Indianapolis, Ind.	Heat where cold is intol- erable. Paracentesis saline purgation.	48 hours.	Hot water bottle with in-an- descent bulb over it. Japanese pocket stove.		
Booth, B. S., Troy, N. J.	Cold at start. Heat if not re- lieved by cold.	24 to 48 hours.	Hot water bag. Salt bag.	Not often.	Large proportion.
Brose, L. D., Ind. Evansville.	Cold, if not relieved in several hours—Heat.	48 hours.	Bran bag.	No.	Large proportion.
Brown, Price, Toronto, Can.	Heat. Paracentesis.			No.	50 per cent.
Bulson, A. E., Ind. Ft. Wayne.	Cold.	24 hours seldom. 48 hours.		No.	50 per cent.
Carow, F. C., Ann Arbor, Mich.	Cold. (preference).			No.	95 per cent.
Calloun, A. W., Atlanta, Ga.	Heat. Paracentesis.	No definite time.	Hot water bag. Salt bag.	No.	20 per cent.
Chambers, T. R., Jersey City, N. J.	Cold for 20 minutes. Heat for 40 minutes in each hour if symptoms are violent.			No.	
Chestnut, W., Louisville, Ky.	Hot douches.			No.	15 per cent.
Christy, G. C., Pittsburg, Pa.	Heat. Cold seldom.	24 to 48 hours.	Max seed poultices.	No.	None.
Cline, L. C., Indianapolis, Ind.	Heat.			No.	
Clough, H. T., Bangor, Maine.	Cold (6 to 12 hours). Cold.	12 hours.	Commercial bags, Hot compresses.	Yes.	90 per cent.
Connell, J. C., Kingston, Ont.	Dry heat.		Hot water bottle.	Yes.	Proportion small.
Crouch, J. F., Baltimore, Md.	Heat.	24 hours.	Hot compresses.	Yes.	
Davey, J. R., Chicago, Ill.	Heat and cold. Character of either anti- phlogistine.	24 to 72 hours.	Don't use heat unless cold is intolerable.	Yes.	10 per cent.
Day, E. W., Pa. Pittsburg.	Cold.	24 to 48 hours.		Yes.	80 per cent.

NAME.	QUESTION I.	QUESTION II.	QUESTION III.	QUESTION IV.	QUESTION V.
Dudley, W. H., Easton, Pa.	Cold.	24 to 36 hours.	Irrigation by hot water.	No.	70 to 80 per cent.
Dunn, J., Richmond, Pa.	Heat.		Hot water bag.	No.	All.
Ellis, H. Bert., Los Angeles, Cal.	Heat.		Japanese pocket stove.	No.	
Farrell, T. H., Utica, N. Y.	Cold. Paracentesis.	48 hours.	By irrigation.	No.	50 per cent.
Grady, L. D., Nashville, Tenn.	Heat by irrigation.		Hot water bottle.	Yes.	50 per cent.
Harlan, Herbert, Baltimore, Md.	Heat and Cold. Purgation. Pilocarpine.		Japanese pocket stove.	Should not hesitate.	Very large proportion.
Holmes, C. R., Cincinnati, Ohio.	Heat.	If used at all only for short time.	Hot alkaline solutions every two hours.	Seldom.	All.
Holt, E. E., Portland, Maine.	Heat.	If used, not longer than 24 hours.	Dry and moist.		Rarely operate.
Hubbard, Thos., Toledo, O.	Heat.		Hot water bag.	No.	
Ingersoll, J. M., Cleveland, Ohio.	Heat after 24 hours and no change is apparent.		Leiter coil or bag.	Yes.	90 per cent.
Jackson, C., Pittsburg, Pa.	Cold. Rest in bed. Catharsis.	48 hours.		No.	
Johnson, W. B., Patterson, N. J.	Heat.		Japanese pocket stove.	No.	10 per cent.
King, Gordon, New Orleans, La.	Cold. Leeches. Paracentesis.	24 hours.	Hot water bag.	Yes.	75 per cent.
Koyld, T. H., Howellsville, N. Y.	Cold.	24 hours.		No.	None.
Kyle, J. J., Indianapolis, Ind.	Cold. Heat after 52 hours of gradual improvement.	48 hours.	Flaxseed poultices.	No.	All cases early. Extremely large proportion.
Landfried, C. L., New Orleans, La.	Heat.			No.	
Levy, Rob't, Denver, Colo.	Cold.	48 hours.		No.	
Libby, Geo. E., Colorado Springs, Colo.	Cold for 24 to 36 hours.	12 to 36 hours.	Hot water bag.	Only once.	30 per cent.
Lincoln, Wm., Cleveland, Ohio.	Heat.			No.	10 per cent.

NAME.	QUESTION I.	QUESTION II.	QUESTION III.	QUESTION IV.	QUESTION V.
McCoy, Jas., New York, N. Y.	Cold (in acute non-suppurative cases). Heat (in hemorrhagic cases following grippe). Cold. Paracetesis. Purgation.	36 to 48 hours. 24 hours.	Hot douching of ext. auditory canal every 2 or 5 hours.	Yes.	80 to 85 per cent.
McKernon, J. F., Y. Watertown, N. Y.	Heat. Heat. Heat, generally. Cold, seldom.	24 hours.	Hot water bag. Moist cloths with hot water bottle on top.	No.	3 1-8 per cent of acute cases.
McReynolds, J. O., Dallas, Texas.	Heat.		Poultice.	Not often.	Very seldom.
Martin, W. A., San Francisco, Cal.	Heat.		Hot douches in external auditory canal.	Yes.	75 to 85 per cent.
Moss, R. E., San Antonio, Texas.	Cold, seldom.		Hot water bag.	No.	50 per cent.
Munger, C. E., Waterbury, Conn.	Heat.		Flaxseed poultices.	Yes.	
Murray, G. D., Scranton, Pa.	Cold 24 hours. Heat.	24 hours.		No.	75 per cent.
O'Kelley, J. P., New Orleans, La.	Cold.	24 hours.		Yes.	
Parker, E. F., Charleston, S. C.	Dry heat.		Dry heat.	Yes.	
Phillips, W. C., New York, N. Y.	Cold.	24 to 36 hours.	Hot poultices.	No.	
Powell, S. C., Newport, R. I.	Heat.		Bags or coil.	No.	50 per cent.
Ray, J. M., Louisville, Ky.	Heat at first. Cold later if heat does not improve.	Few hours.	Poultices.		
Reynolds, Dudley, Louisville, Ky.	Heat.		Hot water bag.		50 per cent.
Richards, Geo. L., Fall River, Mass.	Cold. Heat occasionally.	24 to 48 hours.		No.	66 per cent.
Richardson, C. W., Washington, D. C.	Cold.	48 hours.			75 per cent.
Roberts, W. H., Pasadena, Cal.	Cold.	24 to 48 hours.	Hot douches in ear.	No.	20 per cent.
Rogers, F. T., Providence, R. I.	Cold first. Heat afterward.	48 to 72 hours.	Leiter coil. Flannel wrung out of hot water.	No.	75 per cent.
Smith, Harvey, Winnipeg, Man.	Cold.	48 to 72 hours.	Hot water bag.	Occasionally.	10 per cent.
Street, J. K., Stuckey, Ia.	Heat for 24 hours. Heat afterward.	24 hours.	Japanese pocket stove. Hot water bag.	Yes.	80 per cent.
Stucky, J. A., Lexington, Ky.	Heat.		Hot water bag.	No.	50 per cent.

NAME.	QUESTION I.	QUESTION II.	QUESTION III.	QUESTION IV.	QUESTION V.
Theisen, T. F., Albany, N. Y.	Heat.		Hot water bag.		Rarely.
Tiffany, F. B., Kansas City, Mo.	Heat occasionally.		Electric coil.	No.	
Toepfz, D. W., N. Y.	Heat after 48 hours.	48 hours.	Poultices.	No.	25 per cent.
Wells, W. A., Washington, D. C.	Cold.		Hot bags.	No.	
	Paracentesis.	72 to 96 hours.	Moist Compresses.	No.	
	Heat after 72 to 96 hours.	Then heat.			
Wheelock, K. K., St. Wayne, Ind.	Heat.		Water bag.	Yes.	
Wheats, J. E., Pittsburg, Pa.	Heat, but pref. early operation.			No.	
Wilson, N. L., Elizabeth, N. J.	Heat in ear and canal.	36 hours.		No.	
Wislow, J. R., Baltimore, Md.	Cold over mastoid.	12 hours.	Hot water bag.	Rarely.	33 1-3 per cent.
	Cold if seen early.		Hot bags.		
	Heat otherwise.		Hot water bag.		
Wishart, Toronto, Can.	Heat.		Leiter coil.	Yes.	20 per cent.