

Gastroenterology and Hepatology

The Diagnostic Data

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Abstract

The Annual Reports of the Mount Sinai Hospital from the 1850s, and the *Mount Sinai Hospital Reports* for 1897–1906, make it possible to trace the discharges of gastroenterological inpatients, and (for a few years) of outpatients. Fully computerized diagnostic data have only been available since 1986. In the 19th century, about 20% of the outpatients had digestive disorders, the commonest of which were gastralgia/gastritis/dyspepsia, gastroenteritis, oropharyngeal complaints and constipation. A similar proportion of inpatients had digestive diagnoses, but the four disorders listed above decreased markedly in the second half of the 19th century, so that by the turn of the century the commonest diseases were typhlitis (appendicitis), hemorrhoids and other anal problems. By the 1990s, digestive diseases accounted for only 5% of total admissions, hepatobiliary diagnoses being the commonest group. Some cancers such as gastric and esophageal showed little change, while colorectal increased markedly. Some newly recognized diseases, such as peptic ulcer, waxed and then waned, while colitis and regional enteritis came and have continued to increase. Other new diagnoses, such as autointoxication and visceroptosis, flashed into prominence and then disappeared totally, presumably because they were nondiseases. **Key Words:** Gastroenterology, hepatology, diagnostic data.

THIS CHAPTER DISCUSSES the numbers and diagnoses of patients with digestive and liver diseases in The Mount Sinai Hospital from its founding. In this hospital, as in other medical centers, patients were treated by internists and general surgeons until the subspecialties were recognized. For example, the first patient to be admitted to Mount Sinai, on June 5, 1855, was operated for (and cured of) fistula-in-ano (1, 2), and the first paper in Volume 1 of the bound *Miscellaneous Writings by the Attending Staff of Mount Sinai* is on gastrotomy for esophageal stricture (3).

Many of the great hospitals in the 19th century published detailed annual reports. Fortunately, it is possible to extract from most of the *Annual Reports of Mount Sinai Hospital* from 1855 complete lists of the diseases of inpatients and in some years also of outpatients. These lists were at first in Latin, but

English terms soon appeared, and all the diseases were in English by the 1870s. Fatalities were usually noted and there were separate listings for surgery, and for children from 1877. Surgery was divided into 1st and 2nd divisions in 1900, as was medicine, in 1906. The short-lived *Mount Sinai Hospital Reports* (1897–1906) give remarkably full details of the gastrointestinal conditions of the inpatients of the medical, pediatric and surgical services during these ten years, classified by sex and outcome (cured, improved, unimproved, died). Such detailed data did not become available again until 1986, when the records were fully computerized by diagnosis.

The data extracted from the reports from 1855–1995 have been collated to provide total admissions and deaths at Mount Sinai, together with the total number of hepatogastroenterological diagnoses and fatalities irrespective of department, and the proportion of total admissions in these years, so that trends in incidence and fatality of the various diseases over the 140 years can become apparent. For simplicity, the data from both sexes have been combined.

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Clearly, there have been problems in disassembling the original data and then reassembling the figures into useful tables. Patients were often transferred between departments in one admission and may have been counted twice. Some patients may have had more than one diagnosis, so the sum of diagnoses may be greater than the number of admissions. Moreover, the changing pattern of diseases and the changing nomenclature required certain clarifying decisions.

In the 19th century, alcoholism and oropharyngeal diseases were classified as digestive diseases and have therefore been included in all tables. Alcoholism includes delirium tremens, inebriation and intoxication. Diseases of the oropharynx include dental caries, odontalgia and periodontal disease; mouth abscesses, gingivitis, palatal ulcers, pyorrhea, stomatitis; croup, pharyngitis and tonsillitis/amygdalitis (acute, follicular, hypertrophic, suppurative). Gastric and gastroduodenal catarrh, dyspepsia, gastrorrhagia and indigestion are included in gastralgia, which is a neutral word I have chosen to indicate any upper abdominal discomfort, now often called non-ulcer dyspepsia. In 1902, Brill (4) concluded that “an attack of gastralgia terminates with the eructations of gas and the pain is usually relieved by pressure in the epigastrium. [However,] there can be little doubt that many of the so-called cases of gastralgia or stomach cramp are really attacks of gall-stone colic.” Lilienthal, in 1911, found that 55% of 82 of his private patients with gall bladder disease, and an even higher proportion of the 100 ward cases a year at Mount Sinai, had been previously diagnosed as having stomach trouble (5). Gastritis has been classified as in the original reports, but in the absence of endoscopy, histology and radiology, all these patients should be considered as having gastralgia, although some must have had peptic ulcers. The diagnosis “stomach (functional)” includes gastric neurosis, neurasthenia, hysteria, and hyperchlorhydria nervosa. Infective hepatitis includes catarrhal jaundice. Constipation includes fecal impaction and obstipation. Enteralgia was defined in 1879 by Wardell (6) as a painful affection of the intestines of neuralgic character, generally accompanied with constipation and flatus. Enteritis includes diarrhea, enterocolitis, dysentery, gastroenteritis and (gastro)intestinal catarrh. Abdominal pain, colic, enteralgia, functional pain, gas, mucous and neurasthenic colitis are included in “irritable gut,” a neutral phrase chosen to indicate

any lower abdominal discomfort, with or without bowel disturbances. Included in this diagnosis is the ancient term “intestinal colic,” defined by Begbie in 1879 (7) as “severe pain in the abdomen (in a restricted view, in the colon), occurring in paroxysms, not stationary, but on the contrary moving from place to place, accompanied by a sense of constriction and tearing, for the most part also by that of expulsion.” In 1902, Brill categorized this colic: “. . . the pain is usually centered about the umbilicus, is not as agonizing as in gall-stone colic and is relieved by the passage of flatus and by firm pressure” (4). Ulcerative (entero)colitis includes acute, catarrhal, chronic, croupous, membranous, necrotic, subacute and ulcerative colitis. Appendicitis includes cecitis, typhlitis and perityphlitis. The term “autointoxication” was used at Mount Sinai only between 1898 and 1906 and does not correspond to any modern diagnosis. In 1905, Brill (8) defined it as “an infectious disease of definite clinical aspects . . . having somewhat the picture of typhoid fever. . . .” and cited Cumston’s 1898 paper, “Autotoxaemia” (9, 10). Although that paper refers to toxins produced by most organs in the body, including the stomach and intestine, with little or no resemblance to the Mount Sinai term, Koplik (11) embraced the concept of gastrointestinal autointoxication when he attributed transitory attacks of renal failure to episodes of alternating constipation and mucus diarrhea (mucous colitis) in which intestinal toxins are absorbed. Hemorrhoids and anal diseases have been included, but other purely surgical conditions have been excluded. Visceroptosis includes enteroptosis, gastroptosis, and hepatoptosis.

Clinical Data

Any history of a clinical speciality must first try to identify the patients’ complaints and the doctors’ diagnoses during a particular decade. Today there are national surveys of samples of whole populations, of visits to primary care physicians and clinics, and hospital admissions. The data presented here are of digestive disorders extracted from the *Annual Reports of The Mount Sinai Hospital*.

Deaths in New York

In 1852, there were 21,601 reported deaths in the city of New York (Manhattan), of which only 3137 were in hospitals or public institu-

tions, and 5281 were deaths of infants under the age of one year. The city's population was then 558,412. The commonest cause of death, numbering 3397, was from some diarrheal illness, of which 1774 were certified either as diarrhea, dysentery or inflammation of the bowel, 1527 as cholera, and 96 as typhoid. The other conditions killing more than 500 were consumption (2487), convulsions (1680), stillbirths (1405), inflammation of the lungs (1062), marasmus (971), dropsy of the heart (882), typhus (662), apoplexy (653), scarlet fever (613), and croup (595).

Outpatients

For the general population served by the hospital, the least biased data are those of the outpatients seen in the Dispensary, where any sick person, however poor and irrespective of ethnic origin, would be seen and if necessary given medication. There are detailed diagnoses for two periods, the nine years of 1860 and 1864–1871, between which total attendance increased from 90 to 981 and gastroenterological attendance increased from 20 to 159. For the three years 1877–1879, total

attendance averaged 10,159 annually, of which 2156 were gastroenterologic (Table 1).

Thus, the proportion of outpatients with gastroenterological problems increased by one-third from 15% to 20%, between the 1860s and 1870s. Their ten commonest complaints, expressed as proportions of total attendances or of gastroenterological diagnoses, are shown in Table 2.

The commonest GI complaint of outpatients in the 1860s as in the 1990s was upper abdominal pain (40%), which was only slightly less common (31%) in the late 1870s. Enterohepatological infections, probably mostly bacterial but some certainly due to worms or viral hepatitis, increased from 28% to 41% in this period, probably from overcrowding with poor sanitation, contaminated water and food. Constipation and hemorrhoids were together about as frequent as oropharyngeal disease (13%), mostly pharyngitis and tonsillitis (probably bacterial); all are rarer today with less overcrowding and the availability of antibiotics. In the 1990s, one of the commonest diagnoses by a gastroenterologist is some form of irritable gut, which was probably underdiagnosed in the 1860s (5%) and 1870s (2%).

TABLE 1
Outpatients. 1860-1871, 1877-1879.

Year	1860	1864	1865	1866	1867	1868	1869	1870	1871	Annual Mean 1860-1871	1877	1878	1879	Annual Mean 1877-1879
Total	90	310	437	459	619	743	906	1064	981	623	10,996	9,858	10,727	10,519
GI	20	54	71	67	113	88	122	170	160	96	2,308	2,227	1,923	2,156
GI%	22	17	16	15	18	12	13	16	16		21	23	18	20
Alcohol			2					2		—	4	19	8	
Oropharynx	5	7	2	0	13	11	20	35	19	12	380	203	245	275
Esophagus — misc.											3	3	2	
(Gastro)enteritis		12	22	20	26	27	31	29	50	24	795	778	541	705
Internal Obstruction											3	8		4
Peritonitis				2		1	2	1		1				
Peritoneal Malignancy							1			—				
Liver Abscess													2	1
Cirrhosis											22	22	44	29
Enlarged		2						1		—		1		—
Misc.		1								—		2	1	1
Catarrhal Jaundice		2	2	2	1		1	1	6	2	39	32	28	33
Gallstones												2		1
Parasites — Ascaris	1									—	181	112	70	121
Taenia		1		1		2			1	1	17	16	39	24
Stomach Cancer											3	5		3
Gastralgia	8	19	31	34	49	22	39	80	62	38	672	729	570	657
Gastric Ulcer											6	14	21	14
Colon Carcinoma							1	1	2	—				
Constipation	5	7	9	6	11	11	6	5		7	34	175	191	133
Colitis											17	34	5	19
Irritable Gut					8	8	8	7	10	5	6	40	70	39
Typhlitis	1			1			3			1	2	3	3	3
Hemorrhoids		2	3		5	6	9	5	9	4	101	32	34	56
Anal		1		1			2	2	1	1	23	19	37	26

TABLE 3
Notes for GI Diagnoses 1996.

<p>4. Esophagus — misc., 1443 (114), diaphragmatic hernia 297 (6), esophagitis 97 (9), reflux 408 (15), stricture 61 (7), ulcer 64 (9); achalasia 27, diverticulum 20 (1), dyskinesia 26 (1), dysphagia 230 (20), foreign body 6, hemorrhage 15 (4), perforation 3, varices 193 (41); other 16 (1).</p>	<p>14. Liver — misc., 1823 (328), abscess 14 (4), alcoholic 61 (8), Budd-Chiari 14 (3), chronic (unspecified) 112 (21), chronic persistent hepatitis 55, coma 230 (94), echinococcus 5 (1), hepatomegaly 5, hepatorenal 60 (43), jaundice 15, necrosis 103 (36), portal hypertension 102 (15), portal vein thrombosis 60 (12), viral hepatitis 805 (79), other 183 (12).</p>
<p>6. Gastric — misc., 797 (40), angiodysplasia, 27 (1), anorexia nervosa 3, bulimia 6, eating disorder 3, benign tumor 17 (1), dilation 4 (1), functional 33; Gastritis 60 (8), acute 35 (2), alcoholic 8, atrophic 60 (3), gastroduodenitis 148(3), + hemorrhage 124(8). Mallory-Weiss 39 (9), nausea/vomiting 174, pyloric spasm/stenosis 56 (4).</p>	<p>15. Biliary, 1278 (51), carcinoma 15 (2), cholecystitis 582 (6), cholelithiasis 278 (5), cholangitis 110 (11), cholangiocarcinoma 62 (7), obstruction biliary ducts 125 (12), other 106 (8).</p>
<p>7. Gastric/Peptic Ulcer, 490 (22), gastric ulcer 67 (4), + hemorrhage 101 (7), + obstruction 3 (1), + perforation 4 (1); peptic ulcer 300 (6), + hemorrhage 14(3), + perforation 1.</p>	<p>16. Gastroenteritis and other Small Intestine, 1537 (99), gastroenteritis 384 (6), gastroenteritis bacterial 475 (32), - radiation 15 (1), - toxic 7; benign tumor 14 (1), blind loop 3, celiac 7, functional diarrhea 162 (6); ischemia 106 (27), malabsorption 98 (4), malignant 26 (1), perforation/fistula 116 (16), ulceration 15, other 209 (5).</p>
<p>8. Duodenal /Jejunal Ulcer and other Duodenal Diseases, 254 (27), duodenal ulcer 68 (4), + hemorrhage 104 (15), + obstruction 2, + perforation 7; jejunal/marginal ulcer 12 (1). There were additional patients with duodenitis 45 (3), and other 16 (4).</p>	<p>17. Enteritis, enterocolitis, 544 (6), regional enteritis 135 (2), small intestine 198 (3), small and large intestine 116 (1), large intestine 95.</p>
<p>11. Pancreas — misc., 420 (29), pancreatitis acute 193 (18), chronic 76 (2); cysts/pseudo-cysts 18 (2), other 133 (7).</p>	<p>20. Peritonitis, 291 (20), peritonitis 280 (19), peritoneal malignancy 11 (1).</p>
<p>13. Liver — Cirrhosis — 878 (211), cirrhosis 563 (89) - alcoholic 273 (121), - biliary 42 (1).</p>	<p>32. Colon — misc., 370 (17), angiodysplasia 81 (3), benign tumor 137 (4), foreign body 5, hemorrhage 111 (10), megacolon 7, other 29.</p>

Inpatients

In the last century and a half, annual admissions to The Mount Sinai Hospital each year have increased from 113 in 1855 to 47,929 in 1996. The diagnostic data go back only to 1860. Over this period the proportion of gastroenterological admissions decreased steadily from 14% of total admissions to 6% in 1995. However, the severity of gastroenterological cases, as assessed by their fatality, increased from 5% (compared with total mortality of 8%) in 1860 to 6% in the most recent decade (compared with the current all-case mortality of 3%).

The commonest admitting diagnoses in the early decades of Mount Sinai were similar to those in outpatients: gastralgia, (gastro-)enteritis and oropharyngeal diseases (Tables 3 and 4). In the later decades of the 19th century, these were overtaken by the proctological components of perianal disease, hemorrhoids and constipation. (Peri)typhlitis (later to be called appendicitis) increased from 1 patient in 1860, 7 in 1870, 9 in

1880, 15 in 1890, 217 in 1900 and 458 in 1906, falling to only 9 in 1995. Oropharyngeal disease declined rapidly, with only one admission in 1906 and two in 1995.

No patient was diagnosed as having gall bladder disease at Mount Sinai until 1875, but by the 20th century such patients were one tenth of all hepatogastroenterological admissions. Gastric carcinoma was and remains uncommon. In the mid-19th century, patients with colorectal carcinoma were admitted less than once a month, but have become more frequent and 4% of digestive admissions, partly from improved investigational techniques, and (probably) partly from a real increase in incidence. The frequency of colitis, as it became diagnosed separately from (gastro)enteritis-dysentery, increased in this century, so that patients with colitis now represent 10% of digestive admissions, second only to regional enteritis at 11% (see chapter 14). Other disease diagnoses such as autointoxication and visceroptosis suddenly appeared, rose to a peak within a decade, and then effectively disap-

TABLE 4

Commonest Hepatogastroenterological Diagnoses, 1855-1996, of Inpatients by Decade and as Percentage of All GI Diagnoses.

	1855-1866		1867-1876		1877-1886		1887-1896		1897-1906		1986-1995		1996*	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
GI Admissions %	553		932		2258		4179		6759		20,114		16,955	
Gastralgia/Gastritis	248	(45)	264	(28)	502	(22)	826	(20)	381	(6)	890	(4)	797	(5)
Gastroenteritis,														
Inf. Hepatitis, Worms	113	(20)	225	(24)	572	(25)	342	(8)	365	(5)	534	(3)	1690	(10)
Oropharynx	70	(13)	134	(14)	284	(13)	1477	(4)	99	(1)	29	(<1)	246	(1)
Anal / Hemorrhoids	40	(7)	113	(12)	403	(18)	1438	(34)	1278	(19)	315	(2)	331	(2)
Alcohol Excess	28	(5)	27	(3)	15	(<1)	9	(<1)	0	(0)	137	(<1)	1092	(6)
Peritonitis	18	(3)	26	(3)	77	(3)	96	(2)	71	(1)	154	(<1)	291	(2)
Constipation	5	(1)	7	(1)	46	(2)	205	(5)	173	(3)	132	(<1)	239	(1)
Typhlitis / Appendicitis	5	(1)	24	(3)	46	(2)	420	(10)	2211	(33)	76	(<1)	234	(1)
Gastric Carcinoma	3	(1)	8	(1)	33	(1)	56	(1)	233	(3)	258	(1)	178	(1)
Irritable Gut	3	(1)	19	(2)	10	(<1)	27	(<1)	45	(<1)	75	(<1)	144	(1)
Liver Cancer 1°	3	(1)	10	(1)	29	(1)	31	(<1)	67	(1)	183	(1)	292	(1)
2°					2	(<1)	4	(<1)			163	(1)	753	(4)
Liver Cirrhosis			11	(1)	40	(2)	46	(1)	71	(1)	1552	(8)	878	(5)
Liver — misc.			10	(1)	85	(4)	116	(3)	127	(2)	858	(4)	1823	(11)
Colitis			10	(1)	16	(<1)	168	(4)	172	(3)	1926	(10)	320	(3)
Colorectal Carcinoma			8	(1)	36	(2)	63	(2)	136	(2)	630	(3)	509	(3)
Esophageal — misc.			6	(1)	9	(<1)	4	(<1)	46	(<1)	1301	(6)	1443	(9)
Gastric Ulcer			3	(<1)	37	(2)	35	(<1)	96	(1)	733	(4)	490	(3)
Biliary			1	(<1)	28	(1)	80	(2)	589	(9)	1070	(3)	1278	(8)
Intestinal Obstruction			1	(<1)	2	(<1)	36	(<1)	112	(2)	651	(3)	1081	(6)
Esophageal Carcinoma			1	(<1)	7	(<1)	11	(<1)	76	(1)	84	(<1)	54	(<1)
Pancreas Carcinoma					2	(<1)	4	(<1)	15	(<1)	200	(1)	479	(3)
Duodenal Ulcer					1	(<1)	1	(<1)	11	(<1)	716	(4)	193	(1)
Autointoxication									190	(3)	0	(0)		
Pancreatitis									26	(<1)	856	(4)	287	(2)
Visceroptosis									16	(<1)	1	(-)		
Regional Enteritis											2202	(11)	544	(3)
Diverticulitis											1398	(7)	424	(3)
Hemorrhage - upper											1346	(7)	446	(3)
Hemorrhage - lower											130	(<1)	111	(<1)

* The 1996 data are for diagnoses in that year.

peared. No doubt, a historian of the 21st century reviewing Mount Sinai gastroenterology will consider similarly obsolete some of our current diagnostic labels, such as gastro-esophageal reflux disease, non-ulcer dyspepsia, biliary dyskinesia, irritable bowel syndrome and inflammatory bowel diseases.

The 1996 digestive data are presented in Tables 3 and 4 by diagnoses, and not as in 1855 to 1995 by individual patient, who may today have a dozen different diagnoses. Of the 16,955 hepatogastroenterologically coded diagnoses, 34% were hepatobiliary. The commonest gastroenterological diagnoses included 8% for esophageal miscellaneous (mostly gastro-esophageal reflux disorders); 5% for inflammatory bowel; 3% each for gastric ulcer, gastric miscellaneous (mostly gastritis and gastroduodenitis), colorectal and pancreatic carcinoma; and 3% each for diverticulitis and hematemesis from unspeci-

fied site. The number of upper gastrointestinal hemorrhages from specified or unspecified sites was 1072; that is, 6% of all hepatogastroenterological diagnoses.

The changes in absolute and relative frequencies of these diagnoses will be presented in the following chapters, which cover the individual disease groups.

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