Empyema of gallbladder in an infant

Although acute cholecystitis has been described in the past in published reports as a complication of scarlet fever and typhoid (Swing and Bullowa, 1938; Reid and Montgomery, 1920), and perforation of the gallbladder has been noted in infants (Prévot and Babut, 1971), empyema of the gallbladder remains rare.

Case report

A female, birthweight 3.35 kg after a normal pregnancy, was bottle fed and was well until the 10th day of life when she developed a paronychia of the left thumb and an infected spot on her back for which no treatment

was given. At age one month the baby was admitted to hospital with a 3-day history of fever up to 39°C and feeding poorly. On examination the liver was palpable 1 cm below the costal margin. The white cell count was 17 000/mm³, of which 46% were neutrophils. Blood and CSF cultures were sterile. Treatment with ampicillin and flucloxacillin was given by injection. Her temperature settled and feeding improved. On the third day after admission a tender hard mass was noted apparently arising from the medial third of the liver. Further investigations showed that Hb had dropped from 10.3 g/dl to 7.6 g. Plasma bilirubin was 0.3 mg/100 ml; plasma glutamic oxaloacetic transaminase 14 IU/l; plasma glutamic pyruvic transaminase 10 IU/l; alkaline phosphatase 15 KA units/100 ml.

The control film (Fig. 1) of the otherwise normal intravenous pyelogram revealed a mass continuous with

FIG. 1.—Plain film of upper abdomen with mass and liver edge marked and liver scan superimposed.

FIG. 2.—Postoperative cholangiogram showing patent biliary system.

the presumed liver edge, but the superimposed isotopic liver scan (^{99m}Tc -sulphur-colloid) showed a defect in uptake at this site. Laparotomy (Mr. G. L. Bunton) revealed a grossly swollen and inflamed gallbladder (with adhesions to the omentum, transverse colon, and duodenum) which when opened revealed thick pus. A catheter was left in the gallbladder to drain transcutaneously. A rapid and uneventful recovery was made under antibiotic cover.

Two weeks after operation, water soluble contrast was introduced via the draining catheter and filled, via the drainage tract, a patent gallbladder and biliary tract, with free passage into the duodenum (Fig. 2).

Discussion

No evidence of calculus obstruction or of haemolysis was present in this case and it seems possible that haematogenous spread of infection from the skin led to colonization of the gallbladder. The cause of most cases of spontaneous perforation of the bile ducts is also often obscure.

With many manufacturers recommending avoidance of intravenous cholangiography in the young and the often disappointing results in oral cholecystography, a

radioactive liver scan which delineates normal hepatic parenchyma can be a useful adjunct to excretory urography and barium studies in the evaluation of upper abdominal masses. Transcutaneous postoperative cholangiography was necessary to ensure that there was no residual obstruction to the biliary tree, which will be investigated later by oral cholecystography.

Summary

Empyema of the gallbladder was diagnosed in a 1-month-old infant, aided by isotopic liver scan.

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Levels of albumin, α -fetoprotein, and IgG in human fetal cerebrospinal fluid

The estimation of total protein and the relative concentration of specific components of the cerebrospinal fluid (CSF) have been the subject of many investigations because of their significance as diagnostic aids in various pathological conditions (Kabat, Moore, and Landow, 1942; Burtin, 1960; Laterre, Heremans and Carbonara, 1964; Davson, 1967; Laterre, 1973). Protein levels in samples of lumbar CSF from normal adults range between 20 and 40 mg/100 ml. During the first 3 months of life the total protein concentration of CSF appears to be higher, even reaching 120 mg/100 ml.

We report the results of estimating the levels of three proteins, α -fetoprotein (AFP), albumin, and IgG, in CSF from human fetuses. These studies are relevant to the question of the origin of AFP in amniotic fluids of fetuses with 'open' neural-tube defects and to the problem of the permeability of the blood-brain barrier during fetal life.

Materials and methods

Samples of CSF were obtained by aspiration with a syringe either from the lateral ventricles of the brain or from the upper cervical regions of the spinal cord. Six samples which were absolutely clear and free from contamination by blood were assayed: other samples, slightly contaminated, were discarded. 2 fetuses were fresh specimens, spontaneously aborted and apparently

normal. 4 were obtained by hysterotomy; of these, 3 had chromosome abnormalities (Down's syndrome), while the fourth was a male fetus borne by a female carrier of the gene for haemophilia. CSF from these fetuses was collected within 2-5 hours of the hysterotomy. Ages of the fetuses ranged between 16½ and 25½ weeks (Table I).

TABLE I

Age, cause of abortion, and chromosome complement of the 6 fetuses studied

Fetus	Age (w)	Causes of abortion	Chromosome complements
1	16½	Spontaneous	Not tested
2	19½	Spontaneous	Not tested
3	18	Induced	47,XY, + G
4	25	Induced	46,XY
5	25½	Induced	46,XY - G + t(DqGq)
6	25½	Induced	47,XY, + G

Albumin level was measured by the single radial diffusion technique and AFP by the one dimensional antigen-antibody electrophoresis (rocket technique), as previously described (Seller *et al.*, 1973). IgG levels were estimated using commercially available immunoplates (Behringwerke, AG, Marburg, Germany).

Results and conclusions

AFP levels in fetal CSF were found to decline from 1220 μ g/ml in the 16½-week-old fetus to 52 and 60 μ g/ml in the older fetuses tested (Table II). Reduction of the concentration of AFP in CSF, in relation to the ages of the fetuses, was more rapid than that of the levels of AFP in fetal sera. The ratios between the amounts of albumin and AFP in CSF increased with age, passing from 1.8 in a fetus 18 weeks old to 20 in a fetus 25½ weeks old.

IgG in adult CSF ranges from 20-40 μ g/ml (Davson, 1967; Laterre, 1973). It was therefore of great interest to find higher levels of IgG in the CSF of the fetuses. Since most of the IgG present

TABLE II

Levels of AFP, albumin, and IgG in CSF from 6 fetuses

Fetus	Levels of AFP (μ g/ml)			CSF levels (μ g/ml) of			
	(1) CSF	(2) Serum	1/2	(3) Alb	3/1	(4) IgG	3/4
1	1220	Not tested		Not tested			
2	1040	Not tested		Not tested			
3	420	2720	6.47	760	1.8	72	10.5
4	71	1380	11.4	840	11.8	117	7.12
5	52	840	16.4	680	13.1	60	11.3
6	60	690	11.5	1200	20.0	109	11.0