

Bile Acids In Human Breast Cyst Fluid: The Identification of Lithocholic

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Breast cyst fluid (BCF) aspirated from 12 women with fibrocystic disease of the breast and sera obtained simultaneously were analyzed for bile acids. Analysis was performed by gas-liquid chromatography of the acetoxy methyl esters of the bile acids prepared after alkaline hydrolysis of the bile salts. An internal standard served to correct for methodological losses. Low levels of bile acids were found in serum samples, precluding overt hepatobiliary complications. Deoxycholic acid (17-160 $\mu\text{mol/L}$), chenodeoxycholic acid (18-305 $\mu\text{mol/L}$), and cholic acid (3-119 $\mu\text{mol/L}$) were detected in 11 of 12 samples of BCF. In 2 cases, chosen at random, the identities of the bile acids were verified by mass spectrometry. Lithocholic acid (9-23 $\mu\text{mol/L}$), a reported cocarcinogen, was detected in 6 of the 12 samples of BCF. This is the first report of the presence of lithocholic acid in BCF with confirmation by Mass spectrometry. There was no correlation between the levels of individual bile acids and those of potassium ion, Na^+/K^+ , estriol-3-sulfate, or 16 α -hydroxyandrogen sulfates that had been quantified previously in these samples. There was borderline correlation between concentrations of total bile acids and K^+ (P less than 0.06) and Na^+/K^+ (P less than 0.07). Yet to be elucidated are the mechanism of accumulation of bile acids in BCF and whether levels of particular bile acids in BCF may serve to identify that small subset of women with fibrocystic disease at risk for developing breast cancer.

Saturday Evening Post - April 1982 - Constipation and Breast Cancer

Around the turn of the century, doctors blamed all sorts of diseases on constipation. It was thought that a slow transit time through the intestines caused toxic waste to build up, enter the bloodstream and affect various organs of the body. This theory was laid to rest after researchers, using the primitive techniques then available, had failed to identify any toxic substances in the blood of constipated sick people.

However, recent statistical correlations suggest that there may be something valid in this discarded theory after all. Physicians Nicholas L. Petrakis and Eileen B. King of the University of California, writing in *Lancet*, have found that women who have two or fewer bowel movements per week have four times the risk of breast disease (benign or malignant) as women who have one or more bowel movements per day.

The doctors studied more than 5,000 women by employing nipple aspiration (a variation on the use of the breast pumps nursing mothers use) to get small samples of breast fluid, which is normally secreted by these glands. The presence of large numbers of abnormal (dysplastic) cells helps to identify women who are at a higher than average future risk for breast diseases - including breast cancer.

Dr. Petrakis reviewed the history of past researchers who failed to identify constipation as a factor in the development of malignancies. As a matter of curiosity, he chose to include questions concerning bowel function in the research protocols developed for his studies of breast-fluid chemistry and cytology.

To quote Dr. Petrakis, "We found that 5% of women having one bowel movement per day would have abnormal dysplastic cells, while 10% of women having fewer than one bowel movement a day would have this abnormality and 20% of women having two or fewer bowel movements per week would show these dysplastic changes in cell character of the breast fluid."

In his view, these findings reactivate turn-of-the-century questions concerning an association between constipation and, in this particular instance, breast disease. He added a concern that this supposition should not be allowed to create a cancer panic among constipated women.

Dr. Petrakis added that "We found that 70% of the women we tested had exogenous (foreign) chemicals in the breast fluid. We don't know why they are there, but we do know that the breast cells are in contact with the bloodstream, which will contain foreign substances absorbed into the circulation system from the skin, lungs, and the gastrointestinal tract."

Dr. Petrakis also cited dietary considerations of interest to vegetarians, including the observation that the bowels of people who eat meat contain greater amounts of mutagenic substance than do the bowels of those who abstain from eating meat. Also cited were observations that the intestinal bacterial flora of meat eaters include certain species that interfere with so-called glucuronide linkages necessary to complete the excretions of estrogen delivered to the gut in bile. It is theorized by some that such "unlinked" estrogens are reabsorbed in the large bowel of meat eaters, a circumstance leading possibly to higher estrogen levels and a greater change of cancer-producing effects.

