What is already known on this topic

Periconceptional folic acid supplementation can prevent most neural tube defects if widely used

Supplementation must begin before conception for it to be effective

What this study adds

Lack of a substantial decline in neural tube defect prevalence in Europe since 1991 shows that the potential for preventing neural tube defects is still far from being fulfilled

Periconceptional supplementation and fortification of staple foods is needed to reach all women before conception and to prevent widening of socioeconomic inequalities

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The mystery of the milky effusion

A 59 year old man was admitted to our cardiac surgical intensive care unit after a third operation on the mitral and aortic valves. His previous operations had been six months before. All three surgeries were done via a median sternotomy, and the left pleural space was never opened during the operations.

The postoperative recovery was initially uneventful. The day after surgery the patient was extubated, and the chest drains removed. The next day, however, we noticed a reduced air entry in the left lower zone of the chest, and a chest x ray showed some haziness in the left lower zone, consistent with a collection of fluid in the left pleural space. A diagnostic aspiration with a 14 gauge venous cannula in the seventh intercostal space in anterior axillary line produced a whitish fluid that looked uncannily like fresh milk.

Laboratory tests confirmed that the fluid was chyle, and the absence of vegetable particles ruled out stomach contents. Chylothorax due to excessive sternal retraction causing injury to the thoracic duct, though rare, is not unknown. The lab categorically labelled the aspirate as chyle and not as milk from the stomach. However, a vigilant attending nurse noted that the patient had drunk 250 ml of milk only 30 minutes before the aspiration. Meanwhile, the sample in the kidney tray showed curdling after two hours.

Because of persistent haziness on the chest x ray, we took a second aspirate at the sixth intercostal space the next day. This produced serosanguinous fluid rather than chyle, and we inserted an intercostal drain, which drained 600 ml in the first 24 hours. We removed the drain after 48 hours and ruefully concluded that the "chyle" of the first sample must have been due to transthoracic stomach aspiration.

We had all got carried away by the milky aspirate and had considered the exotic possibility of chylothorax from repeat surgeries and extensive retraction of the sternum. Even in a busy cardiac surgical intensive care unit that treats some 1200-1300 cases of open heart surgery a year, a simple situation can be made complex by incorrect interpretation of laboratory results.

The milk didn't curdle in the patient's stomach immediately because of the high pH of his gastric juice after routine use of H₂ blockers. The pathologist didn't see any vegetable matter in the sample, but the patient had taken only clear fluids for the previous 24 hours. Aspiration was done with the patient in a semi-recumbent position (because of his postoperative status), with a full stomach (250 ml of milk), and during expiration. Clearly, the needle went through the chest wall, pleural space, diaphragm, and peritoneal space and reached the stomach.

Some lessons can be learnt from this. Always try to do an aspiration with the patient in the proper position, bending forward against a table, in full inspiration, and, if possible, with an empty stomach. Investigations go hand in hand with clinical inputs and with the patient status. Milk and chyle can have similar physical characteristics and chemical composition, and interpretation can depend on the feedback by the clinician to the laboratory. Chylothorax is a debilitating and serious condition, whereas transthoracic stomach aspiration is a technical error that has no complications but can lead to a vexed clinical situation that can confuse even the most experienced clinician. This was a fantastic learning experience that has made us wiser and much more sober.

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