discuss acute iron poisoning. Dismissing desferrioxamine (DFO) as the culprit ignores the observation of pulmonary injury in two other conditions treated with infusions of this drug—namely, chronic iron overload and malignant disease. The non-cardiogenic pulmonary oedema is DFO induced and not a consequence of iron poisoning, and in our laboratory we have reproduced these pulmonary lesions in a mouse model (unpublished).

We agree with Dr Macarol and Dr Yawalkar that the risk for pulmonary injury relates to the total dose of DFO over time, and if we limited our patients to a total daily dose of 6·0 g it would not occur. However, this is an empirical recommendation and, as Shannon points out, this dose is insufficient in many cases of acute iron poisoning; more can and has been given without consequence. The lack of knowledge on the optimum use of this drug is frustrating, as echoed in Shannon's letter.

The experience of Dr Chan and colleagues supports their position that a 48 hour infusion of DFO is safe. We chose 24 hours as our cut-off because of one patient with an onset of respiratory problems at 32 hours. The patient of Dr Anderson and Dr Rivers may have been another example; however, it would have been more convincing to have supporting evidence of a low pulmonary capillary wedge pressure. We welcome Dr Helson and colleagues' speculation on the mechanism for the lung injury. Their hypothesis, ours, and any other credible explanation should be considered and tested to elucidate the mechanism so that the risk for this complication can be reduced.

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First-trimester transabdominal fetoscopy

SIR,—In the 1970s and early 1980s, fetoscopy was used during the second trimester of pregnancy for direct visualisation of the external anatomy of the fetus and for fetal blood and tissue sampling. Subsequently, high-resolution ultrasound imaging made second-trimester fetoscopy obsolete. However, during the past decade, prenatal diagnosis has increasingly moved into the first trimester of pregnancy with the introduction of such techniques as transvaginal sonography, chorion villus sampling, and early amniocentesis. First-trimester endoscopy has been introduced to diagnose genetic syndromes with dysmorphic features that are not reliably detected by ultrasonography.[1-3] This technique involves the transcervical insertion of a rigid endoscope, housed in a cannula with an external diameter of 2·2 mm, into the extra-amniotic space and visualisation of the fetus through the amniotic membrane.

We have used a new endoscopic technique to examine the fetus with a flexible fibreoptic endoscope (50 cm long, 0·5 mm outer diameter, 55° field of vision, 1–20 mm depth of field depending on light intensity) introduced transabdominally into the amniotic cavity through a 21-gauge needle. In 15 women undergoing first-trimester termination at 8–12 weeks' gestation, informed written consent was obtained for embryoscopy immediately before the termination. After administration of general anaesthesia, ultrasound examination (3·5 MHz curvilinear transducer, Aloka SSD-650) was used for localisation of the fetus and placenta. Under ultrasound guidance, a 21 G, 15 cm spinal needle was introduced transabdominally into the amniotic cavity with the aim of examining the anterior aspect of the fetus. A sterile flexible microfibrescope (Gerard Barki, Transcot Sa, Geneva) connected to a Xenon light source (488 B, 250 W, K Storz GMBH) was then inserted through the needle. The eyepiece with focus lens was connected to a videocamera and monitor (539 B, K Storz GMBH). By gentle movements of the needle and microfibrescope, the operator attempted to visualise the fetus and umbilical cord.

Successful intra-amniotic insertion of the microfibrescope and visualisation of both eyes, nostrils, mouth, ears, anterior chest wall, umbilicus, hands, and feet was achieved in all cases. The mean duration of the procedure was 5 min (range 2–15 min).

This preliminary study demonstrates the feasibility of direct visualisation of the first-trimester fetus by transabdominal microfibre endoscopy. The technique could be used for the diagnosis of certain well-defined, genetically determined syndromes that are associated with a high rate of perinatal and infant death or with chronic mental or physical disabilities. Examination would be directed to the fetal part most likely to be affected, such as facial cleft, polydactyly or syndactyly, and abnormalities of the external ear. Since such a targeted examination would not add significantly to the duration of an amniocentesis, the risks of fetal loss are likely to be similar. Although there is a potential risk of damage to the developing eye, this has not occurred in the infants born after first-trimester transcervical endoscopy.[1]

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Autoimmune Addison's disease and 21-hydroxylase

SIR,—Autoantibodies to a 55 kDa adrenal specific microsomal protein are characteristic of patients with autoimmune Addison's disease.[1-3] We reasoned that the antigen might be the adrenal specific enzyme steroid 21-hydroxylase (21-OH) so we studied the interaction of adrenal autoantibodies with purified native 21-OH and recombinant 21-OH expressed in yeast. Our findings indicate that 21-OH is a major autoantigen in adult onset Addison's disease, confirming and extending the report by Dr Winqvist and colleagues (June 27, p 1559).

21-OH was purified from human adrenal homogenates by hydrophobic chromatography with Octyl-Sepharose.[4,5] Western blots of fractions eluted from the column with increasing concentrations (0·0025% to 0·2%) of Emulgen indicated that adrenal autoantibodies recognised a 55 kDa protein in column fractions eluted with 0·2% Emulgen (fig 1). Adrenal autoantibodies did not react with column fractions of placental material purified in the same way, confirming tissue specificity. Rabbit antibody to recombinant 21-OH (kindly provided by Dr B. Chung[6]) also reacted with the 55 kDa adrenal protein (fig 1) but not with placental material. In further experiments the protein was electroeluted from sodium dodecylsulphate polyacryalmide gels (SDS-PAGE) and re-run on SDS-PAGE. This resulted in a single well-defined 55 kDa band on coomassie-blue staining, and western blots of this band showed that it interacted strongly with both adrenal autoantibodies and rabbit antibody to 21-OH. Furthermore, absorption of native human 55 kDa adrenal protein with human adrenal autoantibodies prevented the subsequent reaction of the protein with rabbit autoantibodies to 21-OH on western blot analysis. Adrenal autoantibodies reacted with recombinant human

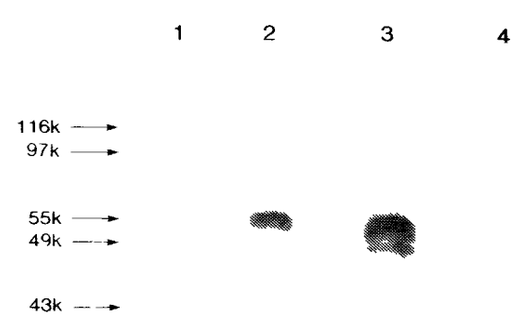

Fig 1—Western blots reaction with: Octyl Sepharose purified native human 21-OH.

Reaction with: lane 1 = normal pool human serum (1 in 800 dilution); lane 2 = adrenal autoantibody positive adult onset Addison serum (1 in 800), lane 3 = rabbit antibody to recombinant human 21-OH (1 in 10 000), lane 4 = normal rabbit serum (1 in 10 000)