Ultrasound Biomicroscopy of Capsular Delamination (True Exfoliation) of the Crystalline Lens

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An 86-year-old woman came to our emergency ward, and the impression was acuteangle-closure glaucoma attack with corneal edema of the left eye. Incidentally, we found a diaphanous membrane in the anterior chamber, and it was confirmed to be capsular delamination (true exfoliation) of the crystalline lens using ultrasound biomicroscopy. Capsular delamination of the lens can easily be missed because it is transparent and very thin. It is more difficult to find this membrane if the cornea is not sufficiently clear. Ultrasound biomicroscopy at 50 MHz produces good resolution of the fine diaphanous capsular split membrane. Ultrasound biomicroscopy is an effective method for investigating these difficult cases. (*Chang Gung Med J 2003;26:930-2*)

Key words: capsular delamination, true exfoliation syndrome, ultrasound biomicroscopy.

Capsular delamination is rare. It is not frequently reported because most patients with this disease have no symptoms, and the transparent delaminated membrane is easily missed. A diagnosis of this disease is much more difficult when the cornea is not sufficiently clear. We report a case of acute-angle closure glaucoma attack with corneal edema; capsular delamination was incidentally found and confirmed using ultrasound biomicroscopy.

CASE REPORT

An 86-year-old woman came to our emergency ward with left-eye pain, nausea, and vomiting for 1 day. There was no history of systemic or eye disease, or any surgical history. The corrected visual acuities of both eyes were 20/200. Slit-lamp examination revealed that the left cornea was edematous, and both lenses presented severe nuclear sclerosis. The anterior chambers of both eyes were shallow. Both pupils were round but fixed, and anisocoria of the right eye was 3 mm and of the left eye was 5 mm. The cup/disc ratio in the right eye was 0.5 and in the left eye was 0.3. The intraocular pressure in the right eye was 17 mmHg and in the left eye was 47 mmHg. Gonioscopy of the right eye revealed an open angle, while the left eye showed 360° angle closure. Phacomorphic angle-closure glaucoma was the impression. We prescribed mannitol and antiglaucoma medications, after which the intraocular pressure dropped to 19 mmHg.

On the next day, the intraocular pressure of the right eye was 12 mmHg and of the left eye was 14 mmHg. The corneal edema had decreased. Incidentally, we noticed an indistinct diaphanous thin membrane in the anterior chambers of both eyes (Fig. 1). With ultrasound biomicroscopy, we found that the membrane was inserted into the anterior lens capsule. It touched the corneal endothelium when it fluffed up with eye movement (Fig. 2). We traced the occupational history and discovered that she had worked at a charcoal factory for more than 5 years, during which time she was exposed to open-fire ovens. Cataract surgeries were performed a few days later. The corrected visual acuity of the right eye returned to 10/20 and the left eye to 6/20 three months after the surgeries. The intraocular pressure of both eyes was normal, and the left corneal edema subsided.

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Fig. 1 A thin, diaphanous membrane floating in the anterior chamber in front of the crystalline cataractous lens (arrow).



Fig. 2 With ultrasound biomicroscopy, we were able to confirm that the membrane was inserted into the lens capsule and was in contact with the corneal endothelium.

DISCUSSION

Capsular delamination is rare. Elschnig described the first case of capsular delamination in 1922 in glassblowers who were exposed to intensely hot, open fires.⁽¹⁾ The disease pathology consists of the partial splitting of the anterior capsule of the crystalline lens. The superficial portion of the lens capsule splits from the deeper layer and extends into the anterior chamber. It stirs with eye movement. The pathogenesis has been reported to include prolonged exposure to heat,⁽¹⁻⁴⁾ inflammation,⁽⁵⁾ and trauma,⁽⁶⁾ as well as eyes harboring a copper or iron foreign body,⁽⁷⁾ senile exfoliation (pseudoexfoliation),⁽⁷⁾

and idiopathic.⁽⁷⁻⁹⁾ The dense cataract and capsular delamination in our patient was associated with infrared radiation from heat exposure.

Diagnosing capsular delamination involves identifying the fluffed diaphanous membrane that is dehisced by partial thickness from the lens capsule. Because of the thin thickness of 17.5 µm, this disease can easily be missed during clinical examinations.⁽¹⁰⁾ From our case, we know that ultrasound biomicroscopy is easily performed and produces good resolution of this diaphanous membrane. Using this noninvasive examination, we were able to determine whether the membrane was inserted into the lens capsule, and if the membrane was in contact with the corneal endothelium. Furthermore, ultrasound biomicroscopy is a requisite when the cornea is not sufficiently clear to check the anterior chamber. It has been reported that high-resolution ultrasound biomicroscopy can be used to investigate such a fine apparatus as fiber groups in the zonular architecture.

In conclusion, ultrasound biomicroscopy is an effective tool for investigating capsular delamination. It is a requisite especially when the cornea is opaque.

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以超高頻超音波診斷水晶體囊層狀剝落(眞性剝落物)

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-86歲女性至本院急診求診,診斷為左眼急性隅角閉鎖性青光眼發作合併同側角膜水 腫。吾人發現於同側眼前房有一透明薄膜存在並以高頻超音波診斷其為水晶體囊眞性層狀剝 落。水晶體囊眞性層狀剝落在臨床上少見且不易診斷。此因其為一極透明薄膜漂浮於前房在 檢查時不易發現。當角膜清澈度不足時要診斷此種病例更加困難。以50 MHz高頻超音波檢查 可發現其對於此不易見之透明薄膜具有良好解像力。對於角膜清澈度不足之病人高頻超音波 是更為有利的檢查工具。(長庚醫誌 2003;26:930-2)

關鍵字:水晶體囊層狀剝落,真性剝落症候群,高頻超音波。

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