The many faces of idiopathic oedema of women

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Summary
The variable presentation and paucity of physical signs in idiopathic oedema may commonly delay diagnosis. The resultant unnecessary investigations and hazardous treatment are described for six patients. The management of these patients is discussed in the light of the current controversy concerning the role of diuretics in the pathophysiology of this condition.

Introduction
Although the clinical entity of idiopathic oedema or periodic swelling in young women has been described for many years (Thorn, 1957) the episodic nature of physical signs and unfamiliarity with its variable presentation may frequently delay diagnosis. This, together with a lack of sustained clinical response to diuretics, the apparent but inappropriate symptomatic therapy, has caused considerable resentment and frustration to patient and doctor alike (Leading Article, 1976). This report draws attention to the unnecessary investigations and potentially hazardous treatment that may result from its variable presentation.

Case histories
The six patients were seen at an out-patient department. All had initially presented to various specialities (Table 1) and had undergone extensive investigation for some years (mean 5 years) before the diagnosis of periodic oedema was made. This was based on objective evidence of a diurnal weight variation in excess of 1-4 kg and the exclusion of cardiac, renal, hypoproteinaemic or hepatic disease by clinical examination, blood urea and electrolytes, liver function tests, electrocardiogram and chest X-ray. All medication, including diuretics, was withdrawn.

Case 1
Symptoms began in 1971 when the patient noted swelling and 'puffiness' of the face subsiding by midday by which time the abdomen and breasts were 'bloated'. By evening, pitting oedema of the

Table 1. Speciality referrals, investigations and treatment before diagnosis

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age (in years) at onset (and years to diagnosis)</th>
<th>Speciality referrals</th>
<th>Procedures (notable features)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>37 (5)</td>
<td>Gynaecology</td>
<td>Hysterectomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urology</td>
<td>IVP and cystoscopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endocrinology</td>
<td>(Diuretic abuse, hypokalaemia)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General medicine</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>41 (9)</td>
<td>Gynaecology</td>
<td>IVP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endocrinology</td>
<td>Brain scan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Urology</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neurosurgery</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>51 (2)</td>
<td>Gastroenterology</td>
<td>Investigated for ascites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endocrinology</td>
<td>Rings removed from fingers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Subclinical hypothyroidism)</td>
</tr>
<tr>
<td>4</td>
<td>34 (1)</td>
<td>Gynaecology</td>
<td>Laparoscopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General medicine</td>
<td>(Anxiety)</td>
</tr>
<tr>
<td>5</td>
<td>40 (2)</td>
<td>Cardiology</td>
<td>Diuretic induced oedema</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General medicine</td>
<td>(Anxiety)</td>
</tr>
<tr>
<td>6</td>
<td>30 (10)</td>
<td>Endocrinology</td>
<td>Obesity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gynaecology</td>
<td>(Diet-induced attacks)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychiatry</td>
<td></td>
</tr>
</tbody>
</table>
ankles was present. Episodes lasted 3–4 days, remitting spontaneously only to recur 2–3 times each month, particularly premenstrually. Some 6 months later, following an episode of abdominal pain attributed to salpingitis and repeated attacks of abdominal swelling, hysterectomy was performed for 'chronic pelvic inflammation'. Histology was normal. Periodic swelling persisted and over the subsequent three years the patient had urological and extensive and repeated biochemical and endocrinological (adrenal, pituitary, ovarian and thyroid function tests) investigations for the symptoms of oedema during, and polyuria after the attacks of oedema.

When she presented again in 1977 the patient had acquired two complete outfits of clothing normally returning home at midday to change before continuing work. She had thiazide diuretics initially and subsequently frusemide (up to 120 mg/day without potassium supplements). She was also overweight, and there was objective evidence of a marked variation in bust (9 cm), waist (10 cm) and weight (3 kg) measurements during attacks (Fig. 1). She abused frusemide and at the time of presentation complained of lethargy which was probably attributable to hypokalaemia (2.5 mmol/l). Having had numerous attacks while off all therapy and a continuous low-calorie low-salt diet for one year the patient now is content to rely on the occasional use of a combination of a thiazide and amiloride for an attack which coincides with an important social or psychological event. The greatest therapeutic benefit to the patient has come from her understanding and that of her family (who also suffered at the time of attacks) of the basis and benign nature of this condition.

**Case 2**

This woman was initially referred to hospital in 1969 because of premenstrual tension and intramenstrual facial and ankle swelling. Gynaecological assessment was normal. During the subsequent six years she was repeatedly referred to and from gynaecologist to endocrinologist to urologist without any apparent abnormality being detected. Neurosurgical investigation for a migrainous type headache during the attacks was also normal. Following diagnosis, the patient was able, with considerable difficulty, to discontinue both diuretics and analgesics that she had been prescribed for symptomatic relief and, during the last year off all medication, has suffered only two attacks compared to 10–15 in the previous years.

**Case 3**

Initially this woman attributed her marked intermittent abdominal and ankle swelling to the menopause. During one episode of hand oedema her rings were removed by cutting at a casualty department and, because of marked abdominal swelling, she was referred to a gastroenterologist for investigation of ascites. Subsequently she was found to have subclinical hypothyroidism and responded favourably to thyroxine, without any recurrence of periodic swelling.

**Case 4**

On her second attack of mild facial and marked

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**FIG. 1.** Typical measurements during an attack of idiopathic oedema showing diurnal weight gain and the effect of diuretics.
abdominal oedema this patient was admitted as a
gynaecological emergency and underwent a
negative laparoscopy for a possible ovarian cyst.
Subsequently she was referred to a medical clinic
with anxiety about her general health. Episodes of
periodic swelling unrelated to the menstrual cycle
continue to recur two to three times per year and are
managed by bed rest alone.

Case 5
Although investigations of marked ankle oedema
during warm weather at two clinics were normal,
thiazide diuretics were prescribed. The patient was
subsequently given frusemide and the episodes of
ankle oedema were then accompanied by a bloated
sensation in the breasts and abdomen. This apparent
worsening convinced the patient that she had
intractable heart disease. Withdrawal of diuretics
has been associated with the disappearance of breast
and abdominal swellings. Off all therapy, the
patient continues to have ankle oedema and anxiety
concerning her health.

Case 6
Periodic oedema particularly associated with a
relaxation of dietary restrictions for obesity was
repeatedly investigated over a 10-year period. The
patient discontinued diuretic therapy which was
repeatedly prescribed. Because of a lack of physical
signs despite considerable complaints the patient
underwent a normal psychiatric evaluation. Follow-
ing diagnosis, attempts at a sustained low calorie
diet have been unsuccessful and periodic oedema
continues.

Discussion
Although the general acceptance of easily
measured diagnostic criteria (diurnal weight gain in
excess of 1-4 kg in the absence of secondary causes—
Thorn, 1968; Edwards and Bayliss, 1975) has
facilitated recognition of this common condition,
cases are frequently undiagnosed for many years.
Symptoms such as puffiness of the face, a bloated
sensation and marked swelling of breasts, abdomen
and ankle may vanish as soon as the patient is
investigated at rest in hospital. The nature of these
and the attendant non-specific symptoms such as
fatigue and headache commonly lead to unnecessary
investigation and an erroneous label of anxiety.
Typically, the condition occurs in females between
20-45 years of age and may at first appear to be an
exaggeration of premenstrual symptoms. During
the course of the day oedema tends to move from
the face and hands to the breasts and abdomen
associated with standing, and by late afternoon or
evening is most marked at the ankles. The excess
weight gain is not, as occurs in normal subjects,
lost by the following day and subjects begin the next
day heavier. This stepwise increase in weight occurs
for some days until there is a spontaneous or, more
commonly (Fig. 1), diuretic-induced diuresis. Patients
frequently graduate from thiazides to the
more potent loop diuretics which they commonly
abuse, and hypokalaemia as in Case 1 is not
uncommon. In the cases described in this report the
apparent accumulation of fluid in one particular
part of the body or attention to one symptom in
particular lead to a diversity of specialist referrals
and investigations (Table 1). In addition, patients
have also presented with cerebral or pulmonary
oedema (Edwards and Bayliss, 1975). However, in
those patients who were considered to have ascites,
ovarian cysts, cardiac or renal disease, there was
evidence of a diurnal weight gain, and once con-
considered the condition rarely requires detailed
investigation. The failure to recognize idiopathic
oedema may also be attributed to the omission of
this common condition from consideration in the
majority of standard text books. The recent recogni-
tion that subclinical hypothyroidism, as in case 3,
may present as idiopathic oedema (Al-Khader
and Aber, 1979) suggests that thyroid function should
also be included in the exclusion criteria for
diagnosis.

The cause of this condition remains obscure.
Central to the development of a typical attack
appears to be marked hypovolaemia upon assump-
tion of the erect posture which is associated with
exaggeration of the normal compensatory responses,
inappropriate proximal renal tubular reabsorption
of sodium, activation of the renin-angiotensin
system, secondary proximal renal tubular reabsorption
of sodium, activation of the renin-angiotensin
system, secondary aldosteronism and ADH secre-
tion (Streten et al., 1973; Edwards and Bayliss,
1975). In the upright position, these patients have a
delay in the excretion of a water load and an inability
to dilute urine (Zech, Pozet and Carreras-Berges,
1977). Based on uncontrolled 18O-labelled albumin
studies (Edwards and Bayliss, 1975), it has been
suggested that an abnormally large leak of plasma
fluid from the circulation leads to a profound fall in
plasma volume.

Recently, MacGregor et al. (1979) argued that the
majority if not all cases are due initially to diuretics
or a sudden increase in sodium and carbohydrate
intake following periods of marked self-imposed
starvation. Diuretic-induced hypovolaemia and
stimulation of the renin-angiotensin-aldosterone
system leads to salt and fluid retention. They
demonstrated that, following an initial period of
weight gain, diuretic withdrawal or a low salt diet
lead to a permanent remission in the majority of
patients. While undoubtedly in many patients
(e.g. Cases 1, 2, 5, 6) diuretics or dietary manipula-
tion may cause or propagate the condition, there
are many other cases where these factors cannot be implicated (Edwards and Dent, 1979; Lagrue, Behar and Baille, 1979). It is perhaps the latter patients who do not, as suggested by MacGregor et al. (1979), almost invariably respond to withdrawal of diuretics. Certainly, some of the patients described both here and by Edwards and Dent (1979) continued to have attacks one year following withdrawal of diuretics. The use of a longer acting thiazide with an aldosterone antagonist (reducing the risk of hypokalaemia and secondary hyperaldosteronism) reduces the severity of attacks in these patients. Case reports describing the successful use of dopaminergic agonists (Norbriato et al., 1979) or captopril (Mimran and Targhetta, 1979) should at present be viewed as experimental methods of decreasing the contributory role of the renin-angiotensin system. Because of the episodic nature of the condition it is essential that properly controlled clinical trials be carried out to establish the therapeutic merits of any treatment. Until this happens, and having dealt with diuretic or dietary induced attacks, patients are best managed in a supportive manner.

References


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