

## Internal jugular vein thrombosis following ovarian hyperstimulation

W. V. JESUDASON, M.R.C.S. (ENG.), M. SMALL, F.R.C.S.

### Abstract

Superovulation therapy with in vitro fertilization (IVF) treatment may result in ovarian hyperstimulation syndrome and a hypercoagulable state. The site of thrombus formation is commonly in the upper venous extremities. One case of bilateral internal jugular vein thrombosis following ovarian hyperstimulation is described. The clinical presentation, investigations and management are discussed.

**Key words:** Jugular Veins; Thrombosis, Venous; Ovarian Hyperstimulation Syndrome

### Introduction

Both ovarian stimulation and the condition of pregnancy are significant risk factors for thrombus formation. These factors combine in patients undergoing assisted conception therapy. If ovarian stimulation results in ovarian hyperstimulation syndrome then the thrombotic risk is further increased. As the upper venous extremities are a common site for thrombus formation, the patient can present with neck pain and swelling. For this reason it is important for ENT surgeons to be aware of the condition and its management.

### Case report

A 26-year-old lady with a history of polycystic ovarian syndrome underwent superovulation therapy and IVF treatment. One week following embryo transfer she developed severe ovarian hyperstimulation syndrome (OHSS) characterized by ascites and pulmonary oedema. This required admission to the high dependency unit. Treatment involved fluid replacement, thromboprophylaxis with TED stockings and low molecular weight heparin, abdominal paracentesis and protein replacement. A right internal jugular vein central line was inserted for monitoring which remained in situ for four days. An ultrasound scan confirmed that the patient was eight weeks pregnant with twins. After three weeks of treatment as an in-patient she was discharged home.

A week later she was referred to the ENT department with a three-day history of severe right neck pain, swelling and limitation of neck movement. The referring doctor was concerned that she might have developed an infection at the site of her right internal jugular vein central line. Physical examination revealed a mild generalized neck swelling which was slightly more pronounced on the right side (Figure 1). The patient was exquisitely tender over the right neck.

There was no evidence of skin inflammation or erythema. An ultrasound examination of the neck was performed which showed bilateral internal jugular vein

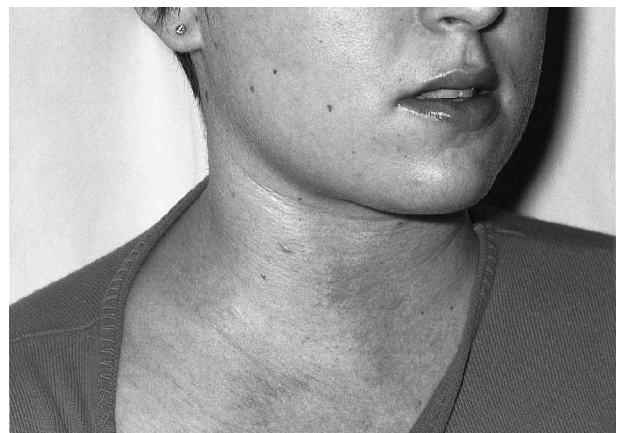


FIG. 1  
Bilateral neck swelling (right>left).

thrombosis (Figures 2 and 3) with occlusion of the vessels. The thrombosis appeared longstanding on the left side but acute on the right side with tender distension of the vein. There was no evidence of any abscess or collection. Following consultation with the haematologists, obstetricians and vascular surgeons the decision was made to treat the patient with TED stockings, low molecular weight heparin and intravenous antibiotics. Three days following the commencement of treatment the patient developed left arm pain and swelling. Another ultrasound examination was performed which confirmed the extension of thrombus into the left subclavian and axillary veins with involvement up to the midportion of the cephalic vein. With the continuation of treatment the patient's symptoms began to settle and she was discharged home from the ENT ward after five days.

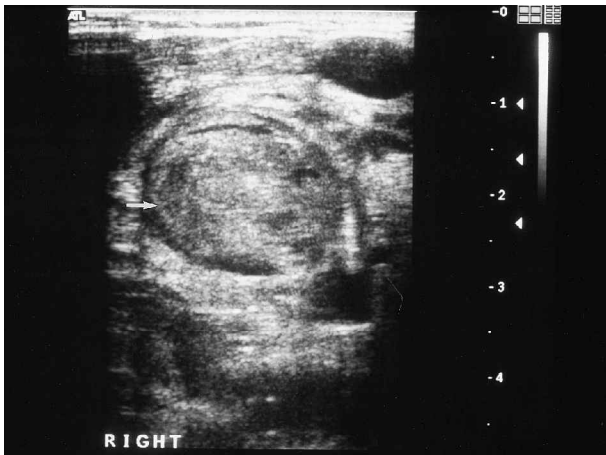


FIG. 2

Ultrasound right internal jugular vein (white arrow indicates thrombus).

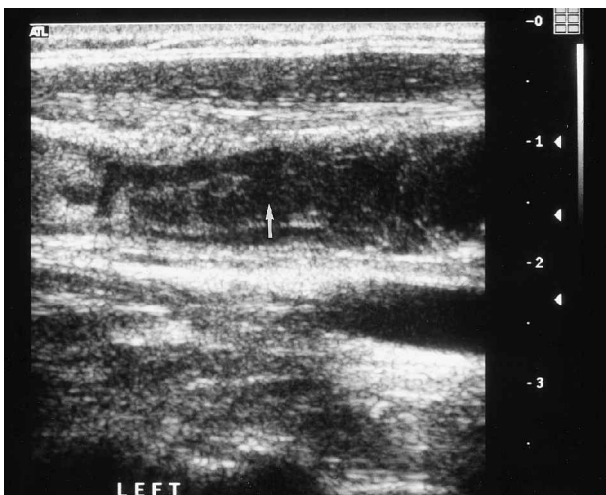


FIG. 3

Ultrasound left internal jugular vein (white arrow indicates thrombus).

### Discussion

Between two to six per cent of IVF treatment cycles may be complicated by ovarian hyperstimulation syndrome.<sup>1</sup> Polycystic ovaries are a risk factor for OHSS. In one to two per cent of IVF cases OHSS may be severe and is characterized by ovarian enlargement (Figure 4), ascites, pleural effusions, hypoalbuminaemia and a reduction of intravascular volume. This leads to a hypercoagulable state which can cause both arterial and venous thrombosis.<sup>2</sup> Previously reported series suggest this is most likely to occur between seven to 10 weeks gestation.<sup>3</sup> The site of thrombus formation tends to be in the upper extremities although there is no clear reason for this at present.

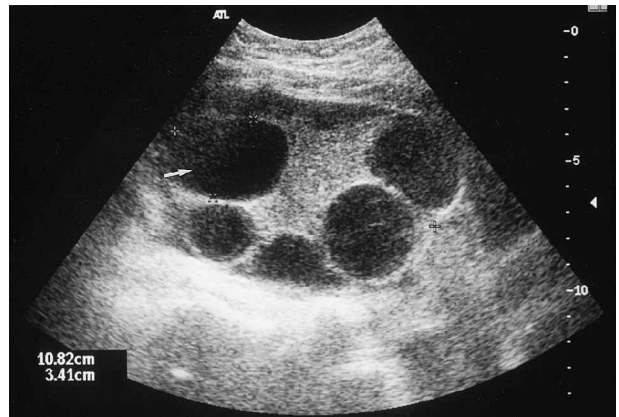


FIG. 4

Ultrasound right ovary (white arrow indicates enlarged follicle).

Treatment consists of intravenous fluid and electrolyte replacement, abdominal paracentesis and thromboprophylaxis in the form of graduated compression stockings and low molecular weight heparin.

Although internal jugular vein thrombosis associated with OHSS appears to be well recognized by haematologists and obstetricians, there is little awareness within the ENT community of a condition that commonly presents with neck pain and swelling. These patients must be managed carefully as the well-being of both mother and child must be considered.

At the time of submission the patient is 23 weeks gestation with twins and is back at work with no ongoing symptoms of upper extremity venous thrombosis. She remains on low molecular weight heparin.

### References

- Whelan JG III, Vlahos NF. The ovarian hyperstimulation syndrome. *Fertil Steril* 2000;**73**:883–96
- Baumann P, Diedrich K. Thromboembolic complications associated with reproductive endocrinologic procedures. *Hematol Oncol Clin North Am* 2000;**14**:431–43
- Arya R, Shehata HA, Patel RK, Sahu S, Rajasingham D, Harrington KF, *et al.* Internal jugular vein thrombosis after assisted conception therapy. *Br J Haematol* 2001;**115**:153–5

Address for correspondence:

Mr W. V. Jesudason,  
41 Provis Road,  
Chorlton,  
Manchester M21 9EN, UK.

E-mail: vimdoc@aol.com

Mr W. Jesudason takes responsibility for the integrity of the content of the paper.

Competing interests: None declared